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A Bibliography of Imported Fire Ants and the Chemicals and Methods Used for Their Control

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A Bibliography of Imported Fire Ants and the Chemicals and Methods Used for Their Control

By W. A. Banks,[1] [2] C. S. Lofgren,[1] and D. P. Wojcik[1]

INTRODUCTION

The red and black imported fire ants, *Solenopsis invicta* Buren and *Solenopsis richteri* Forel, have invaded more than 52 million hectares of land in the southern United States since they were inadvertently introduced some 30 to 60 years ago (Lofgren et al. 1975). These ants have been variously judged as a serious economic and public-health menace, as a minor nuisance, as totally innocuous, and even as beneficial. Organized control programs have been directed against these insects for nearly two decades, first with heptachlor (1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene) or dieldrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-*endo-exo*-5,8-dimethanonaphthalene), and since 1963 with mirex (dodecachlorooctahydro-1,3,4-metheno-1*H*-cyclobuta[*cd*]pentalene). During this interim, much research has been conducted to find better control methods and to assess the impact that the ants and the techniques of control have had on the environment. A large number of scientific papers and some popular articles have been published. Because of the continuing interest in imported fire ants and their control, we have compiled a bibliography of these papers and articles.

All scientific papers concerned in any way with imported fire ants are included in this bibliography. We manually searched both the Life and the Agricultural, Food and Veterinary Sciences editions of Current Contents published by the Institute for Scientific Information, Dissertation Abstracts, the Bibliography of Agriculture, and Abstracts of Entomology. In addition, we utilized the Agricultural Research Service (ARS) Current Awareness Literature Service provided by the Lending Division, National Agricultural Library. This service is a computerized search of Biological Abstracts, Bio-Research Index, and Chemical Abstracts. We also visited the libraries of land-grant colleges and universities where we knew work had been done on imported fire ants to check theses and dissertations that might not have been included in Dissertation Abstracts. To our knowledge, all articles in popular magazines are included, but no attempt was made to include newspaper articles. All papers dealing with mirex—its residues and so forth—and with control of fire ants are included. Papers on ants which did not specifically deal with fire ants or with the use of mirex to control other ants, other Hymenoptera, or Isoptera were excluded. The literature search for this bibliography was completed in July 1977.

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[1] Entomologist, Insects Affecting Man Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Gainesville, Fla. 32604.

[2] Present address: Imported Fire Ant Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Gulfport, Miss. 39503.

BIBLIOGRAPHY

A

1. Abraham, R.; Koepke, U. C.; Goldberg, L.; and Coulston, F. 1975. Individual and combined effects of mirex and polychlorinated biphenyls on mouse liver cells. Toxicol. Appl. Pharmacol. 29: 128–129.
2. Abston, P. A., and Yarborough, J. D. 1974. Effects of dietary mirex on selected liver enzyme levels of the rat. Assoc. Southeast. Biol. Bull. 21: 35.
3. ———, and Yarborough, J. D. 1974. The *in vivo* effects of dietary mirex on hepatic lactic dehydrogenase and glutamic oxaloacetic transminase levels of the rat. J. Agric. Food Chem. 22: 66–68.
4. ———, and Yarborough, J. D. 1975. Starvation and heat stress response of mirex treated rats. Assoc. Southeast. Biol. Bull. 22: 38.
5. Adams, C. T.; Banks, W. A.; and Plumley, J. K. 1976. Polygyny in the tropical fire ant, *Solenopsis germinata*, with notes on the imported fire ant, *Solenopsis invicta*. Fla. Entomol. 59: 411–415.
6. ———; Plumley, J. K.; Lofgren, C. S.; and Banks, W. A. 1976. Economic importance of the red imported fire ant, *Solenopsis invicta* Buren. I. Preliminary investigations of impact on soybean harvest. J. Ga. Entomol. Soc. 11: 165–169.
7. Adkins, H. G. 1970. The imported fire ant in the southern United States. Assoc. Am. Geogr. 60: 578–592.
8. Adrouny, G. A. 1966. The fire ant's fire. Bull. Tulane Univ. Med. Fac. 25(1): 67–72.
9. ———; Derbes, V. J.; and Jung, R. C. 1959. Isolation of a hemolytic component of fire ant venom. Science 130: 449.
10. Aerial Applicator. 1969. Fire on fire ants. 7(3): 5, 8.
11. Agricultural Aviation. 1971. Electronic track guidance in the USA. 13: 29–30.
12. Agricultural Chemicals. 1958. Fire ant control. 13(2): 51.
13. Alexander, S. D. 1963. Effects of mirex on a treehole mosquito, *Aedes triseriatus* (Say), and the house cricket, *Acheta domesticus* (L.). 26 pp. M.S. thesis, Mississippi State University, Mississippi State.
14. ———, and Norment, B. R. 1974. Effects of mirex on populations of *Aedes triseriatus*. Mosq. News 34: 112–117.
15. Allen, G. E., and Buren, W. F. 1974. Microsporidian and fungal diseases of *Solenopsis invicta* Buren in Brazil. J. N.Y. Entomol. Soc. 82: 125–130.
16. ———; Buren, W. F.; Williams, R. N.; deMenezes, M.; and Whitcomb, W. H. 1974. The red imported fire ant, *Solenopsis invicta:* Distribution and habitat in Mato Grosso, Brazil. Ann. Entomol. Soc. Am. 67: 43–46.
17. ———, and Silviera-Guido, A. 1974. Occurrence of microsporidia in *Solenopsis richteri* and *Solenopsis* sp. in Uruguay and Argentina. Fla. Entomol. 57: 327–329.
18. Allen, R. H., Jr. 1958. History of the imported fire ant in the southeast. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 12: 227–233.
19. Alley, E. G. 1973. The use of mirex in control of the imported fire ant. J. Environ. Qual. 2: 52–61.
20. ———; Dollar, D. A.; Layton, B. R.; and Minyard, J. P., Jr. 1973. Photochemistry of mirex. J. Agric. Food Chem. 21: 138–139.
21. ———, and Layton, B. R. 1974. Identification of insecticide photoproducts by mass spectrometry. *In* R. Hague and F. J. Biros (eds.), Environmental Science Research. Vol. 4. Proc. Symp. Mass Spectrom. NMR Spectrosc. Pestic. Chem., pp. 81–90. Plenum Press, New York.
22. ———; Layton, B. R.; and Minyard, J. P., Jr. 1974. Identification of the photoproducts of the insecticides mirex and Kepone. J. Agric. Food Chem. 22: 442–445.
23. ———; Layton, B. R.; and Minyard, J. P. 1974. Photoreduction of mirex in aliphatic amines. J. Agric. Food Chem. 22: 727–729.
24. Andrade, P., Jr. 1974. Biodegradation of mirex by sewage sludge organisms. 44 pp. M.S. thesis, University of Florida, Gainesville.
25. ———, and Wheeler, W. B. 1974. Biodegradation of mirex by sludge organisms. Bull. Environ. Contam. Toxicol. 11: 415–416.
26. ———; Wheeler, W. B.; and Carlson, D. A. 1975. Identification of a mirex metabolite. Bull. Environ. Contam. Toxicol. 14: 473–479.
27. Arant, F. S., and Eden, W. G. 1949. Control of the imported fire ant. Ala. Agric. Exp. Stn. Prog. Rep. Ser. No. 42, 2 pp.
28. ———; Hays, K. L.; and Speake, D. W. 1958. Facts about the imported fire ant. Highlights Agric. Res. Ala. Agric. Exp. Stn. 5(4): 12–13.
29. Avery, S. W.; Jouvenaz, D. P.; Banks, W. A.; and Anthony, D. W. 1977. Virus-like particles

in a fire ant, *Solenopsis* sp., (Hymenoptera: Formicidae) from Brazil. Fla. Entomol. 60: 17–20.

B

30. Baetcke, K. P.; Cain, J. D.; and Poe, W. E. 1972. Residues in fish, wildlife, and estuaries: Mirex and DDT residues in wildlife and miscellaneous samples in Mississippi—1970. Pestic. Monit. J. 6: 14–22.
31. Baker, M. F. 1958. Fire ant, a wildlife menace? Va. Wildl. 19(11): 27.
32. ———. 1963. Field-pen tests of mirex with bobwhite quail. U.S. Fish Wildl. Serv. Circ. 199, pp. 116–117.
33. ———. 1963. New fire ant bait. Highlights Agric. Res. Ala. Agric. Exp. Stn. 10(2): 16.
34. ———. 1964. Studies on possible effects of mirex bait on the bobwhite quail and other birds. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 18: 153–159.
35. ———, and Hill, E. P., III. 1963. Effects on bobwhite and coturnix quail of a Kepone-peanut butter bait used for fire-ant control. U.S. Fish Wildl. Serv. Circ. 167, pp. 97–98.
36. Baker, R. C.; Coons, L. B.; Mailman, R. B.; and Hodgson, E. 1972. Induction of hepatic mixed function oxidases by the insecticide, mirex. Environ. Res. 5: 418–424.
37. Baker, R. D., and Applegate, H. G. 1973. Effect of ultraviolet radiation on the persistence of pesticides. Tex. J. Sci. 25: 53–59.
38. Banks, W. A.; Glancey, B. M.; Stringer, C. E.; Jouvenaz, D. P.; Lofgren, C. S.; and Weidhaas, D. E. 1973. Imported fire ants: Eradication trials with mirex bait. J. Econ. Entomol. 66: 785–789.
39. ———; Hicks, D. M.; Plumley, J. K.; Jouvenaz, D. P.; Wojcik, D. P.; and Lofgren, C. S. 1976. Imported fire ants: 10-5, An alternate formulation of mirex bait. J. Econ. Entomol. 60: 465–467.
40. ———; Jouvenaz, D. P.; Lofgren, C. S.; and Hicks, D. M. 1973. Evaluation of coatings for corncob grit-soybean oil bait used to control imported fire ants. J. Econ. Entomol. 66: 241–244.
41. ———; Lofgren, C. S.; Jouvenaz, D. P.; Wojcik, D. P.; and Summerlin, J. W. 1973. An improved mirex bait formulation for control of imported fire ants. Environ. Entomol. 2: 182–185.
42. ———; Lofgren, C. S.; and Stringer, C. E. 1964. Laboratory evaluation of certain chlorinated hydrocarbon insecticides against the imported fire ant (*Solenopsis saevissima richteri*). J. Econ. Entomol. 57: 298–299.
43. ———; Markin, G. P.; Summerlin, J. W.; and Lofgren, C. S. 1972. Four mirex bait formulations for control of the red imported fire ant. J. Econ. Entomol. 65: 1468–1470.
44. ———; Stringer, C. E.; Barthel, W. F.; and Lofgren, C. S. 1966. Control of imported fire ants with nonachlor. J. Econ. Entomol. 59: 465–467.
45. ———; Stringer, C. E.; Lofgren, C. S.; Pierce, N. W.; and Bartlett, F. J. 1970. Fur-Ag: An alternate carrier for soybean oil-mirex bait for control of the imported fire ant. J. Econ. Entomol. 63: 1990–1991.
46. ———; Stringer, C. E.; and Pierce, N. W. 1971. Effect of toxicant concentration and rate of application of mirex bait on control of the imported fire ant, *Solenopsis saevissima richteri*. J. Ga. Entomol. Soc. 6: 205–207.
47. Barlin, M. R.; Blum, M. S.; and Brand, J. M. 1976. Fire ant trail pheromones: Analysis of species specificity after gas chromatographic fractionation. J. Insect Physiol. 22: 839–844.
48. Barnes, C. S. 1977. Studies on the maturation and reproduction of the insects *Aedes aegypti* and *Solenopsis invicta*. 135 pp. Ph. D. dissertation, University of Southern Mississippi, Hattiesburg.
49. Baroni-Urbani, C., and Kannowski, P. B. 1974. Patterns in the red imported fire ant settlement of a Louisiana pasture: Some demographic parameters, interspecific competition and food sharing. Environ. Entomol. 3: 755–760.
50. Barthel, W. F., and Lofgren, C. S. 1964. A comparison of some granular carriers for chlordane and heptachlor against the imported fire ant. J. Agric. Food Chem. 12: 339–342.
51. ———; Murphy, R. T.; Mitchell, W. G.; and Corley, C. 1960. The fate of heptachlor in the soil following granular application to the surface. J. Agric. Food Chem. 8: 445–447.
52. Bartlett, F. J., and Lofgren, C. S. 1961. Field studies with baits against *Solenopsis saevissima richteri*, the imported fire ant. J. Econ. Entomol. 54: 70–73.
53. Bass, J. A. 1974. Selected aspects of the biology of the imported fire ant and the geographical location and identification of the fire ant species in South Carolina. 40 pp. M.S. thesis, Clemson University, Clemson.
54. ———, and Hays, S. B. 1976. Geographic location and identification of fire ant species in South Carolina. J. Ga. Entomol. Soc. 11: 34–36.
55. ———, and Hays, S. B. 1976. Predation by the mite, *Tyrophagus putrescentiae* on eggs of the imported fire ant. J. Ga. Entomol. Soc. 11: 16.
56. Begum, S.; Graeb, S.; Palar, H.; and Korte, F. 1973. Ecological chemistry. LXIV. Reaction behavior of kelevan in solution, as a solid, and in the gas phase studied by U.V. irradiation. Chemosphere 2: 235–238. [In German. English abstract in Chem. Abstr. 81(07): 034458.]
57. Bellinger, F.; Dyer, R. E.; King, R.; and Platt, R. B. 1965. A review of the problem of the imported fire ant. Bull. Ga. Acad. Sci. 23: 1–22.
58. Bellomy, M. D. 1952. The terrible fire ant. Frontiers 19(3): 114–116.
59. Bennett, A. G. 1957. Imported fire ant control. Miss. Agric. Ext. Serv. Publ. 249, 6 pp.
60. Bevenue, A.; Ogata, J. N.; Tengan, L. S.; and Hylin, J. W. 1975. Mirex residues in wildlife and soils, Hawaiian pineapple-growing areas—

1972–4. Pestic. Monit. J. 9: 141–149.

61. Bhatkar, A. P. 1973. Confrontation behavior of *Solenopsis invicta* Buren towards certain ant species native to Florida. 181 pp. Ph. D. dissertation, University of Florida, Gainesville.

62. ———, and Whitcomb, W. H. 1970. Artificial diet for rearing various species of ants. Fla. Entomol. 53: 229–232.

63. ———; Whitcomb, W. H.; Buren, W. F.; Callahan, P.; and Carlysle, T. 1972. Confrontation behavior between *Lasius neoniger* (Hymenoptera: Formicidae) and the imported fire ant. Environ. Entomol. 1: 274–279.

64. Bigley, W. S. 1976. Metabolism and interactions of the castes of the imported fire ant *Solenopsis invicta* treated and exposed to methoprene alone and synergized. 106 pp. Ph. D. dissertation, Texas A&M University, College Station.

65. ———, and Vinson, S. B. 1975. Characterization of a brood pheromone isolated from sexual brood of the imported fire ant. Ann. Entomol. Soc. Am. 68: 301–304.

66. Blake, G. H. 1956. Imported fire ant on the march in Alabama. Highlights Agric. Res. Ala. Agric. Exp. Stn. 3(3): 5.

67. ———, and Eden, W. G. 1956. Imported fire ant control in Alabama. Proc. Assoc. South. Agric. Workers 53: 146.

68. ———; Eden, W. G.; and Hays, K. L. 1959. Residual effectiveness of chlorinated hydrocarbons for control of the imported fire ant. J. Econ. Entomol. 52: 1–3.

69. ———, and Ruffin, W. A. 1957. Imported fire ants. Ala. Polytech. Inst. Agric. Ext. Circ. 516, 6 pp.

70. Blasingame, W. E. 1958. Georgia imported fire ant eradication program. Fla. Entomol. 41: 189.

71. Blum, M. S. 1970. The chemical basis of insect sociality. *In* M. Beroza (ed.), Chemicals Controlling Insect Behavior, pp. 61–94. Academic Press, New York.

72. ———. 1971. Arthropod defensive secretions. Proc. 2d Int. Congr. Pestic. Chem. 3: 163–176.

73. ———. 1973. Comparative exocrinology of the Formicidae. Proc. VII Congr. Int. Union Study Soc. Insects, pp. 23–40.

74. ———. 1974. Pheromonal sociality in the Hymenoptera. *In* M. S. Birch (ed.), Frontiers of Biology. Vol. 32, pp. 222–249. American Elsevier, New York.

75. ———, and Brand, J. M. 1972. Social insect pheromones: Their chemistry and function. Am. Zool. 12: 553–576.

76. ———, and Callahan, P. S. 1960. Chemical and biological properties of the venom of the imported fire ant (*Solenopsis saevissima* var. *richteri* Forel) and the isolation of the insecticidal component. Trans. 11th Int. Cong. Entomol. (symp. 3/4): 290–293.

77. ———; Roberts, J. E., Jr.; and Novak, A. F. 1961. Chemical and biological characterization of venom of the ant *Solenopsis xyloni* McCook. Psyche 68: 73–74.

78. ———; Walker, J. R.; Callahan, P. S.; and Novak, A. F. 1958. Chemical, insecticidal, and antibiotic properties of fire ant venom. Science 128: 306–307.

79. Bond, C. A.; Woodham, D. W.; Ahrens, E. H.; and Medley, J. G. 1975. Cumulation and disappearance of mirex residues. II. In milk and tissues of cows fed two concentrations of the insecticide in their diet. Bull. Environ. Contam. Toxicol. 14: 25–31.

80. Bong, R. L. 1975. Determination of hexachlorobenzene and mirex in fatty products. J. Assoc. Off. Anal. Chem. 59: 557–561.

81. ———. 1977. Collaborative study of the recovery of hexachlorobenzene and mirex in butterfat and fish. J. Assoc. Off. Anal. Chem. 60: 229–233.

82. Boock, O. J., and Lordello, L. G. E. 1952. Formiga "lava-pe," praga da batatinha—*Solanum tuberosum* L. Rev. Agric. (Piracicaba) 27: 377–379.

83. Bookhout, C. G., and Costlow, J. D., Jr. 1975. Effects of mirex on the larval development of the blue crab. Water Air Soil Pollut. 4: 113–126.

84. ———, and Costlow, J. D. 1976. Effects of mirex, methoxychlor, and malathion on development of crabs. U.S. Environ. Prot. Agency, Off. Res. Dev. Rep. EPA-600/3-76-007, 85 pp.

85. ———; Wilson, A. J., Jr.; Duke, T. W.; and Lowe, J. I. 1972. Effects of mirex on the larval development of two crabs. Water Air Soil Pollut. 1: 165–180.

86. Borthwick, P. W.; Cook, G. H.; and Patrick, J. M., Jr. 1974. Residues in fish, wildlife, and estuaries: Mirex residues in selected estuaries of South Carolina—June 1972. Pestic. Monit. J. 7: 144–145.

87. ———; Duke, T. W.; Wilson, A. J., Jr.; Lowe, J. I.; Patrick, J. M., Jr.; and Oberheu, J. C. 1973. Residues in fish, wildlife, and estuaries: Accumulation and movement of mirex in selected estuaries of South Carolina, 1969–71. Pestic. Monit. J. 7: 6–26.

88. ———; Tagatz, M. E.; and Forester, J. 1975. A gravity-flow column to provide pesticide-laden water for aquatic bioassays. Bull. Environ. Contam. Toxicol. 13: 183–187.

89. Brand, J. M.; Blum, M. S.; and Barlin, M. R. 1973. Fire ant venoms: Intraspecific and interspecific variation among castes and individuals. Toxicon 11: 325–331.

90. ———; Blum, M. S.; Fales, H. M.; and MacConnell, J. G. 1972. Fire ant venoms: Comparative analyses of alkaloidal components. Toxicon 10: 259–271.

91. ———; Blum, M. S.; and Ross, H. H. 1973. Biochemical evolution in fire ant venoms. Insect Biochem. 3: 45–51.

92. Brauer, B. 1977. Mirex on the loose. Ward's Bull. 16(103): 6.

93. Brazzel, J. R. 1972. Fire ant control: Procedure and environmental impact. *In* H. L. Sherman (ed.), Environmental Quality. II, pp. 61–65. Mississippi State College for Women Leader-

ship Forum, Columbus.

94. Brian, M. V. 1975. Larval recognition by workers of the ant *Myrmica*. Anim. Behav. 23: 745–756.

95. Brooks, G. T. 1974. Chlorinated insecticides. Vol. 1. Technology and applications. 249 pp. Vol. 2. Biological and environmental aspects. 197 pp. CRC Press, Cleveland, Ohio.

96. Broome, J. R. 1973. Microbial control of the imported fire ant, *Solenopsis richteri* Forel. 66 pp. Ph. D. dissertation, Mississippi State University, Mississippi State.

97. ———; Callaham, M. F.; and Heitz, J. R. 1975. Xanthene dye-sensitized photooxidation in the black imported fire ant, *Solenopsis richteri*. Environ. Entomol. 4: 883–886.

98. ———; Callaham, M. F.; Lewis, L. A.; Ladner, C. M.; and Heitz, J. R. 1975. Effects of rose bengal on the imported fire ant, *Solenopsis richteri*. Comp. Biochem. Physiol. 51C: 117–121.

99. ———; Callaham, M. F.; Lindig, O. H.; and Heitz, J. R. 1975. Boll weevil lethality induced by substituted xanthenes. J. Miss. Acad. Sci. 20 (suppl.): 55.

100. ———; Sikorowski, P. R.; and Norment, B. R. 1976. Mechanism of pathogenicity of *Beauveria bassiana* on larvae of the imported fire ant, *Solenopsis richteri*. J. Invertebr. Pathol. 28: 87–91.

101. Brown, L. L. 1972. Fire ant allergy. South. Med. J. 65: 273–277.

102. ———. 1973. The physician and fire ants. J. S.C. Med. Assoc. 69: 322–324.

103. Brown, L. R.; Alley, E. G.; and Cook, D. W. 1975. Effect of mirex and carbofuran on estuarine microorganisms. U.S. Environ. Prot. Agency, Off. Res. Dev. Rep. EPA–6603/75–024, 47 pp.

104. Brown, R. 1966. Imported fire ant. Fla. Dep. Agric. Consum. Serv., Div. Plant Ind. Leafl. 1, 8 pp.

105. Brown, W. L., Jr. 1961. Mass insect control programs: Four case histories. Psyche 68: 75–109.

106. Bruce, W. G.; Coarsey, J. M., Jr.; Smith, M. R.; and Culpepper, G. H. 1949. Survey of the imported fire ant, (*Solenopsis saevissima* var. *richteri* Forel). U.S. Dep. Agric. Spec. Rep. S–15, 25 pp. [Unpublished.]

107. Bruch, C. 1930. Notas preliminares acera de *Labauchena daguerrei* Santsci. Rev. Soc. Entomol. Argent. 3: 73–80.

108. Buckmaster, V. 1965. Fire ant states protest end of USDA eradication program. Agric. Chem. 20 (4): 48–49, 121–123.

109. Buffkin, D. C., and Russell, F. E. 1972. Some chemical and pharmacological properties of the venom of the imported red fire ant, *Solenopsis saevissima richteri*. Toxicon 10: 526.

110. ———, and Russell, F. E. 1974. Venom of the imported fire ant: Physiopharmacology, chemistry and therapeutics. Proc. West. Pharmacol. Soc. 17: 223–226.

111. Buren, W. F. 1972. Revisionary studies on the taxonomy of the imported fire ants. J. Ga. Entomol. Soc. 7: 1–26.

112. ———; Allen, G. E.; Whitcomb, W. H.; Lennartz, F. E.; and Williams, R. N. 1974. Zoogeography of the imported fire ants. J. N.Y. Entomol. Soc. 82: 113–124.

113. Burke, J. A. 1974. Report on chlorinated pesticides. J. Assoc. Off. Anal. Chem. 57: 296–298.

114. ———. 1975. Report on chlorinated insecticides. J. Assoc. Off. Anal. Chem. 58: 233–235.

115. ———. 1976. Report on chlorinated pesticides. J. Assoc. Off. Anal. Chem. 59: 338–340.

116. Buschman, L. L.; Whitcomb, W. H.; Hemenway, R. C.; Mays, D. L.; Ru, N.; Leppla, N. C.; and Smittle, B. J. 1977. Predators of velvetbean caterpillar eggs in Florida soybeans. Environ. Entomol. 6: 403–407.

117. Butler, P. A. 1963. Commercial fisheries investigations. U.S. Fish Wild. Serv. Circ. 167, pp. 11–25.

118. ———. 1969. Monitoring pesticide pollution. Bioscience 19: 889–891.

119. ———. 1969. The significance of DDT residues in estuarine fauna. *In* M. W. Miller and G. G. Berg (eds.), Chemical Fallout, pp. 205–220. C. C. Thomas, Springfield, Ill.

120. ———. 1973. Residues in fish, wildlife, and estuaries: Organochlorine residues in estuarine mollusks, 1965–72. Pestic. Monit. J. 6: 238–362.

121. ———, and Springer, P. F. 1963. Pesticides—a new factor in coastal environments. Trans. Wildl. Nat. Res. Conf. 28: 378–390.

122. Butler, R. D. 1968. Report of the survey of county agents on the imported fire ant. 68 pp. U.S. Dep. Agric., Agric. Res. Serv. Spec. Rep. [Unpublished.]

123. Byard, J. L.; Koepke, U. C.; Abraham, R.; Goldberg, L.; and Coulston, F. 1974. Biochemical changes produced in the liver by mirex. Toxicol. Appl. Pharmacol. 29: 126–127.

124. ———; Koepke, U. C.; Abraham, R.; Goldberg, L.; and Coulston, F. 1975. Biochemical changes in the liver of mice fed mirex. Toxicol. Appl. Pharmacol. 33: 70–77.

125. ———, and Pittman, K. A. 1975. Early liver changes produced by mirex and their reversibility. Toxicol. Appl. Pharmacol. 33: 130.

C

126. Cain, S. N. 1972. Uptake and loss of mirex, DDT, and toxaphene in orally treated commercial catfish. 22 pp. M.S. thesis, Mississippi State University, Mississippi State.

127. Callaham, M. F.; Lewis, L. A.; Holloman, M. E.; Broome, J. R.; and Heitz, J. R. 1975. Inhibition of the acetylcholinesterase from the imported fire ant, *Solenopsis richteri*, by dyesensitized photooxidation. Comp. Biochem. Physiol. 51C: 123–128.

128. Callahan, P. S. 1971. Far infrared stimulation of insects with the Glagolewa-Arkadiewa “mass irradiator.” Fla. Entomol. 54: 201–204.

129. ———; Blum, M. S.; and Walker, J. R. 1959. Morphology and histology of the poison glands of the imported fire ant (*Solenopsis saevissima* v. *richteri* Forel). Ann. Entomol. Soc. Am. 52:

573–590.

130. Campbell, T. E. 1974. Red imported fire ant, a predator of direct seeded longleaf pine. U.S. For. Serv. Res. Note SO–179, pp. 1–3.

131. Carlson, D. A.; Banks, W. A.; and Wojcik, D. P. 1973. Distortion of mirex residues in insects owing to use of isopropyl alcohol as a collecting solvent. Bull. Environ. Contam. Toxicol. 9: 365–369.

132. ———; Konyha, K. D.; Wheeler, W. B.; Marshall, G. P.; and Zaylskie, R. G. 1976. Mirex in the environment: Its degradation to Kepone and related compounds. Science 194: 939–941.

133. Carneiro-Riberio, J. H. 1954. Sobre a formiga ruiva e seu combati. Agronomia (Rio de Janeiro) 13: 227–231.

134. Caro, M. R.; Derbes, V. J.; and Jung, R. 1957. Skin responses to the sting of the imported fire ant (*Solenopsis saevissima*). Arch. Dermatol. 75: 475–488.

135. Carroll, C. R., and Janzen, D. H. 1973. Ecology of foraging by ants. Annu. Rev. Ecol. Syst. 4: 231–257.

136. Carroll, J. F. 1970. Role of ants as predators of the sugarcane borer, *Diatraea saccharalis*. 71 pp. M.S. thesis, University of Florida, Gainesville.

137. Carson, R. 1962. Silent Spring. 304 pp. Fawcett, Greenwich, Conn.

138. Carter, W. G. 1962. Ant distribution in North Carolina. J. Elisha Mitchell Sci. Soc. 78: 150–204.

139. Cassista, A. J., and Kricher, J. C. 1973. Possible phytotoxic effects of the insecticide mirex in an early old field ecosystem. Plant Physiol. 51: 22.

140. Cavill, G. W. K., and Clark, D. V. 1971. Ant secretions and cantharidin. *In* M. Jacobson (ed.), Naturally Occurring Insecticides, pp. 271–305. Dekker, New York.

141. ———, and Robertson, P. L. 1965. Ant venoms, attractants, and repellents. Science 149: 1337–1345.

142. Chadwick, R. W., and Freal, J. J. 1974. Comparative lindane metabolism and enzyme induction in rats pretreated with 8 different chlorinated pesticides. Toxicol. Appl. Pharmacol. 29: 127.

143. Charpentier, L. J.; McCormick, W. J.; and Mathes, R. 1967. Beneficial arthropods inhabiting sugarcane fields and their effect on borer infestations. Sugar Bull. 45: 1008–1013.

144. Chemical Marketing Reporter. 1973. Mirex aerial spraying is okayed for southeast. Oct. 1, p. 4.

145. Chernoff, N.; Scotti, T. M.; and Linder, R. E. 1976. Cataractogenic properties of mirex in rats and mice, with notes on Kepone. Toxicol. Appl. Pharmacol. 37: 188.

146. Cherrett, J. M., and Lewis, T. 1974. Control of insects by exploiting their behavior. *In* D. P. Jones and M. E. Solomon (eds.), Biology in Pest and Disease Control, pp. 130–146. 13th Symp. Brit. Ecol. Soc.

147. Chiu, Y. J.; Levy, R.; and Cromroy, H. L. 1974. Biological half-life of cesium-134 in the red imported fire ant, *Solenopsis invicta*. Fla. Entomol. 57: 141–144.

148. Clark, D. R., Jr., and McLane, M. A. R. 1974. Chlorinated hydrocarbon and mercury residues in woodcock in the United States, 1970–1971. Pestic. Monit. J. 8: 15–22.

149. Clarkson, M. R. 1958. Progress in pest control. Farm Chem. 121(1): 46.

150. Clawson, S. G. 1959. Fire ant eradication . . . and quail. Ala. Conserv. 30(4): 14–15, 25.

151. ———, and Baker, M. F. 1959. Immediate effects of dieldrin and heptachlor on bobwhites. J. Wildl. Manage. 23: 215–219.

152. Clemmer, D. I., and Serfling, R. E. 1975. The imported fire ant: Dimensions of the urban problem. South. Med. J. 68(9): 1133–1138.

153. Coburn, J. A.; Valdmanis, I. A.; and Chau, A. S. Y. 1977. Evaluation of XAD–2 for multiresidue extraction of organochlorine pesticides and polychlorinated biphenyls from natural waters. J. Assoc. Off. Anal. Chem. 60: 224–228.

154. Cockerham, K. L., and Clower, D. F. 1957. Get rid of the imported fire ant. La. State Univ. Agric. Ext. Publ. 1215, 6 pp.

155. Cole, L. K. 1975. Antifungal, insecticidal, and potential chemotherapeutic properties of ant venom alkaloids and ant alarm pheromones. 172 pp. Ph. D. dissertation, University of Georgia, Athens.

156. Collins, H. L., and Markin, G. P. 1971. Inquilines and other arthropods collected from nests of the imported fire ant, *Solenopsis saevissima richteri*. Ann. Entomol. Soc. Am. 64: 1376–1380.

157. ———; Cuevas, M. J.; and Markin, G. P. 1973. Laboratory evaluation of some carbamate and organophosphate insecticides as bait toxicants for imported fire ant control. U.S. Anim. Plant Health Insp. Serv. [Rep.] 81–13, 8 pp.

158. ———; Davis, J. R.; and Markin, G. P. 1973. Residues of mirex in channel catfish and other aquatic organisms. Bull. Environ. Contam. Toxicol. 10: 73–77.

159. ———; Markin, G. P.; and Davis, J. 1974. Residue accumulation in selected vertebrates following a single aerial application of mirex bait: Louisiana—1971–72. Pestic. Monit. J. 8: 125–130.

160. Cooley, N. R.; Keltner, J. M., Jr.; and Forester, J. 1972. Mirex and Aroclor 1254: Effect on accumulation by *Tetrahymena pyriformis* strain W. J. Protozool. 19: 636–638.

161. Coon, D. W., and Fleet, R. R. 1970. The ant war. Environment 12(10): 28–38.

162. Cope, O. B. 1963. Sport fishery investigations. U.S. Fish Wildl. Serv. Circ. 167, pp. 26–42.

163. ———. 1966. Contamination of the freshwater ecosystem by pesticides. J. Appl. Ecol. Suppl. 3: 33–44.

164. ———, and Springer, P. F. 1958. Mass control of insects: The effects on fish and wildlife. Bull. Entomol. Soc. Am. 4: 52–56.

165. Couch, J. A. 1976. Attempts to increase baculovirus prevalence in shrimp by chemical exposure. Prog. Exp. Tumor Res. 20: 304–314.

166. Cowperthwaite, W. G. 1958. Present status of the

imported fire ant eradication program in Florida. Fla. Entomol. 41: 189.

167. Crance, J. H. 1965. Fish kills in Alabama ponds after swarms of the imported fire ant. Prog. Fish Cult. 27(2): 91–94.

168. Crawford, R. L., and Atkinson, J. B. 1975. Fire ants used in skeletal preparations. Fla. Entomol. 58: 8.

169. Creighton, W. S. 1930. The New World species of the genus *Solenopsis* (Hymenop.: Formicidae). Proc. Am. Acad. Arts Sci. 66: 39–151, plates 1–8.

170. ———. 1950. The ants of North America. Bull. Mus. Comp. Zool. Harv. Univ. 104: 1–585, plates 1–57.

171. Cripe, C. R. 1974. Dynamics of the pesticide mirex and its principal photoproducts in a simulated marsh system. 99 pp. M.S. thesis, Florida State University, Tallahassee.

172. Crump, W. D. 1972. Studies on mirex toxicity and organ residue levels in the laboratory rat (Sprague-Drawley). 32 pp. M.S. thesis, Mississippi State University, Mississippi State.

173. Culpepper, G. H. 1951. Imported fire ant (*Solenopsis saevissima richteri* Forel). Coop. Econ. Insect Rep. 1: 136–137.

174. ———. 1953. The distribution of the imported fire ant in the southern States. Proc. Assoc. Agric. Workers 50: 102.

175. ———. 1953. Status of the imported fire ant in the southern States in July 1953. U.S. Dep. Agric., Bur. Entomol. Plant Q. [Rep.] E–867, 8 pp.

176. Cupp, E. W., and O'Neal, J. 1973. The morphogenetic effect of two juvenile hormone analogues on larvae of imported fire ants. Environ. Entomol. 2: 191–194.

177. ———; O'Neal, J.; Kearney, G.; and Markin, G. P. 1973. Forced copulation of imported fire ant reproductives. Ann. Entomol. Soc. Am. 66: 743–745.

178. Curl, L. F. 1958. Aerial application in eradication program. Agric. Chem. 13(4): 44.

D

179. Davison, K. L., and Cox, J. H. 1974. Some effects of mirex on chickens, quail, and rats. Fed. Proc. 33: 220.

180. ———; Cox, J. H.; and Graham, C. K. 1975. The effect of mirex on reproduction of Japanese quail and on characteristics of eggs from Japanese quail and chickens. Arch. Environ. Contam. Toxicol. 3: 84–95.

181. ———; Mollenhauer, H. H.; Younger, R. L.; and Cox, J. H. 1976. Mirex induced hepatic changes in chickens, Japanese quail, and rats. Arch. Environ. Contam. Toxicol. 4: 469–482.

182. Dekle, G. W. 1953. The imported fire ant in Florida. Proc. Fla. State Hortic. Soc. 66: 310–311.

183. De la Cruz, A. A., and Navqi, S. M. 1973. Mirex incorporation in the environment: Uptake in aquatic organisms and effects on the rates of photosynthesis and respiration. Arch. Environ. Contam. Toxicol. 1: 255–264.

184. ———, and Rajanna, B. 1974. Mirex uptake by crop seedlings. Assoc. Southeast. Biol. Bull. 21(2): 49.

185. ———, and Rajanna, B. 1975. Mirex incorporation in the environment: Uptake and distribution in crop seedlings. Bull. Environ. Contam. Toxicol. 14: 38–42.

186. Denmark, H. A. 1957. The imported fire ant in Florida. Fla. State Plant Board Leafl., 5 pp.

187. ———. 1962. A key and illustrations of *Solenopsis geminata* (F.) and *Solenopsis saevissima richteri* Forel. Fla. Dep. Agric., Div. Plant Ind., Entomol. Circ. 3, 1 p.

188. ———, and Porter, J. E. 1973. Regulation of importation of arthropods into and of their movement within Florida. Fla. Entomol. 56: 347–357.

189. Dennis, V. C. 1973. A proxemic study of fire ants, *Solenopsis invicta*. Am. Zool. 13: 1257–1258.

190. Desaiah, D.; Ho, I. K.; and Mehendale, H. M. 1977. Effects of Kepone and mirex on mitochondrial magnesium ion-dependent ATPase activity in rat liver. Toxicol. Appl. Pharmacol. 39: 219–228.

191. ———, and Koch, R. B. 1975. Preliminary investigation on the effects of mirex and its derivatives on adenosine triphosphatase activities from fire ants. J. Agric. Food Chem. 23: 1216–1217.

192. DeWitt, J. B.; Menzie, C. M.; Spann, F. W.; and Vance, C. 1963. Pesticide-wildlife studies. U.S. Fish Wildl. Serv. Circ. 199, pp. 105–109.

193. ———; Stickel, W. H.; and Springer, P. F. 1963. Wildlife studies, Patuxent Wildlife Research Center, 1961–1962. U.S. Fish Wild. Serv. Circ. 167, pp. 74–96.

194. Dilling, W. L.; Braendlin, H. P.; and McBee, E. T. 1967. Pentacyclodecane chemistry II: Some reactions of dodecachloropentylcyclo $[5.5.0.0^{2,6}.0^{3,9}.0^{4,8}]$decane and related compounds. Tetrahedron 23: 1121–1224.

195. ———, and Dilling, M. L. 1967. Pentacyclodecane chemistry III: Fragmentation patterns of pentacyclodecane derivatives on electron impact. Tetrahedron 23: 1225–1233.

196. Dingle, H. 1969. A statistical and information analysis of aggressive communication in the mantis shrimp *Gonodactylus bredini* Manning. Anim. Behav. 17: 561–575.

197. Dorough, H. W., and Ivie, G. W. 1974. Fate of mirex-^{14}C during and after a 28-day feeding period to lactating cow. J. Environ. Qual. 3: 65–67.

198. Driver, D.; Brewer, R. N.; and Cottier, G. J. 1976. Pesticide residues in eggs and chicks from laying hens fed low levels of several chlorinated hydrocarbon pesticides. Poult. Sci. 55(4): 1544–1549.

199. Dunham, C. W. 1958. Growers' talks at Delaware course. Am. Nurseryman 107(5): 159–160.

200. Dykstra, W. W. 1958. Relation of wildlife to the fire ant eradication program. Fla. Entomol. 41: 189.

E

201. Eaton, P.; Carlson, E.; Lombardo, P.; and Yates, P. 1960. Pyrolysis of the cage keton $C_{10}Cl_{10}O$. J. Org. Chem. 25: 1225–1227.

202. Eden, W. G., and Arant, F. S. 1949. Control of the imported fire ant in Alabama. J. Econ. Entomol. 42: 976–979.

203. ———, and Garrett, F. E. 1955. Control of soil insect pests in gulf coast Irish potato fields. Ala. Agric. Exp. Stn. Prog. Rep. Ser. No. 60, 1 p.

204. Eisenberg, R. M. 1972. Partition of space among colonies of the fire ant, *Solenopsis saevissima*. I. Spatial Arrangement. Tex. J. Sci. 24: 39–43.

205. Eisner, T., and Wilson, E. O. 1958. Radioactive tracer studies of food transmission in ants. Proc. 10th Int. Congr. Entomol. 2: 509–513.

206. Ellender, A. J. 1971. Fire ant eradication. Congressional Record, Senate, 117, pt. 22: 1867–1871.

207. Enos, H. F.; Biros, F. J.; Gardner, D. T.; and Wood, J. P. 1970. A micromethod for determination of chlorinated pesticides in human tissues. FDA Pestic. Anal. Man. Vol. 3, Sec. HE 212: pp. 1–5.

208. Ettershank, G. 1964. A generic revision of the world Myrimicinae related to *Solenopsis* and *Pheidologeton* (Hymenoptera: Formicidae). Ph. D. dissertation, Cornell University, Ithaca. [Published in 1966 in Austr. J. Zool. 14: 73–171.]

F

209. Fabacher, D. L., and Hodgson, E. 1976. Induction of hepatic mixed-function oxidase enzymes in adult and neonatal mice by Kepone and mirex. Toxicol. Appl. Pharmacol. 38: 71–77.

210. Fancher, C. C. 1961 (1960). Imported fire ant discussion. Proc. Annu. Meet. Chem. Spec. Manuf. Assoc. 47: 147–149.

211. Favorite, F. G. 1958. The imported fire ant. U.S. Public Health Rep. 73, pp. 445–448.

212. Ferguson, D. E. 1962. Fish feeding on imported fire ants. J. Wildl. Manage. 26: 206–207.

213. ———. 1970. Fire ant: Whose pest? Science 169: 630.

214. ———. 1972. Fire ants and the eradication concept. *In* H. L. Sherman (ed.), Environmental Quality. II, pp. 69–76. Mississippi State College for Women Leadership Forum, Columbus.

215. Fincher, G. T., and Lund, H. O. 1967. Notes on the biology of the imported fire ant, *Solenopsis saevissima richteri* Forel (Hymenoptera: Formicidae) in Georgia. J. Ga. Entomol. Soc. 2: 91–94.

216. Florida. Department of Agriculture. Division of Plant Industry. 1967. Detective beetles reveal outlaw ants. News Bull. 9(3): 5.

217. ———. Department of Agriculture. Division of Plant Industry. 1967. Radio beam bad news for imported fire ants. News Bull. 9(3): 4.

218. Florida Fruit and Vegetable Association. 1970. Fire ants. The Harvester. Nov., pp. 2–3.

219. Ford, J. H.; Hawthorne, J. C.; and Markin, G. P. 1973. Residues in food and feed: Residues of mirex and certain other chlorinated hydrocarbon insecticides in beef fat—1971. Pestic. Monit. J. 7: 87–94.

220. Ford, T. 1948. Federal agency's survey crew enters battle to determine extent of fire ant infestation. Ala. Conserv. 20(6): 8–9, 14.

221. Forel, A. 1909. Ameisen aus Guatemala usw., Paraguay and Argentinien. (Hym.). Dtsch. Entomol. Z. 5: 267.

222. Fortune, I. 1948. The biology and control of *Solenopsis saevissima* var. *richteri* Forel. 79 pp. M.S. thesis, Mississippi State College, Mississippi State.

223. Foster, J. 1957. Secrets of the fire ant. Miss. Game Fish 20: 4–5.

224. Frank, J. H. 1977. *Myrmecosaurus ferrugineus*, an Argentinian beetle from fire ant nests in the United States. Fla. Entomol. 60: 31–36.

225. Fraser, R. R., and Passannanti, S. 1976. Synthesis of 2,5-dialkylpyrrolidines via metallated nitrosamines: A constituent of fire ant venom. Synthesis 8: 540–541.

226. Frazier, C. A. 1969. Insect allergy. 493 pp. Warren H. Green, St. Louis.

227. ———. 1974. Allergic reactions to insect bites and stings of fire ants. Arch. Dermatol. 110: 298.

228. ———. 1974. Biting insect survey, a statistical report. Ann. Allergy 32: 200–204.

229. Friedman, D., and Lombardo, P. 1975. Photochemical technique for the elimination of chlorinated aromatic interferences in the gas-liquid chromatographic analyses for chlorinated paraffins. J. Assoc. Off. Anal. Chem. 58: 703–706.

230. Frye, O. E. 1958. Relation of wildlife to the fire ant eradication program in Florida. Fla. Entomol. 41: 189–190.

231. Fulfs, J. C., and Abraham, R. 1976. Effects of mirex and chloroquine on polychlorinated biphenyls induced hepatic porphyria in the rat. Toxicol. Appl. Pharmacol. 37: 119–120.

232. ———; Abraham, R.; and Coulston, F. 1975. Comparative ultrastructural and cytochemical studies in livers of mice, rats, and monkeys fed various levels of mirex. Toxicol. Appl. Pharmacol. 33: 130–131.

233. Fuller, G. B., and Draper, S. W. 1975. Effect of mirex on induced ovulation in immature rats. Proc. Soc. Exp. Biol. Med. 148: 414–417.

234. ———; Draper, S. W.; and Gowdy, W. P. 1973. Effect of mirex on induced ovulation in immature rats. J. Anim. Sci. 36: 211.

G

235. Gabba, A., and Pavan, M. 1970. Researches on trail and alarm substances in ants. *In* J. W. Johnston, Jr., D. G. Moulton, and A. Turk (eds.), Advances in Chemoreception. Vol. 1. Communication by Chemical Signals, pp. 161–

195. Appleton-Century-Crofts, New York.

236. Gaines, J. F., and Lowry, H. E. 1960. The controversial fire ant. Southeast. Vet. 12: 22–24.

237. Gaines, T. B. 1969. Acute toxicity of pesticides. Toxicol. Appl. Pharmacol. 14: 515–534.

238. ———, and Kimbrough, R. D. 1970. Oral toxicity of mirex in adult and suckling rats. Arch. Environ. Health 21: 7–14.

239. Galbreath, E. H. 1965. Toxicity of mirex bait to certain species of wildlife. 48 pp. M.S. thesis, University of Georgia, Athens.

240. George, J. L. 1958. The program to eradicate the imported fire ant. 39 pp. The Conversation Foundation, New York.

241. ———. 1963. Recommendations for minimizing dangers of pest control and pesticides to fish and wildlife. U.S. Fish Wildl. Serv. Circ. 167, pp. 101–105.

242. Georgia Market Bulletin. 1977. Aerial applications of mirex, free bait, available to Ga. Mar. 28, p. 1.

243. Gibson, J. R.; Ivie, G. W.; and Dorough, H. W. 1972. Fate of mirex and its major photodecomposition products in rats. J. Agric. Food Chem. 20: 1246–1248.

244. Gilbert, E. E., and Giolito, S. L. 1952. Pesticide. U.S. Pat. Nos. 2,616,825 and 2,616,928.

245. Glancey, B. M.; Craig, C. H.; Stringer, C. E.; and Bishop, P. M. 1973. Multiple fertile queens in colonies of the imported fire ant, *Solenopsis invicta*. J. Ga. Entomol. Soc. 8: 237–238.

246. ———; Roberts, W.; and Spence, J. 1970. Honeybee populations exposed to bait containing mirex applied for control of imported fire ants. Am. Bee J. 110: 314.

247. ———; Stringer, C. E.; and Bishop, P. M. 1973. Trophic egg production in the imported fire ant, *Solenopsis invicta*. J. Ga. Entomol. Soc. 8: 217–220.

248. ———; Stringer, C. E., Jr.; Bishop, P. M.; Craig, C. H.; and Martin, B. B. 1973. Evaluation of an electronic guidance system for aircraft for bait application in the imported fire ant program. Agric. Aviat. 15: 38–40.

249. ———; Stringer, C. E.; Craig, C. H.; and Bishop, P. M. 1975. An extraordinary case of polygyny in the red imported fire ant. Ann. Entomol. Soc. Am. 68: 922.

250. ———; Stringer, C. E.; Craig, C. H.; Bishop, P. M.; and Martin, B. B. 1970. Pheromone may induce brood tending in the fire ant, *Solenopsis saevissima*. Nature (London) 226: 863–864.

251. ———; Stringer, C. E., Jr.; Craig, C. H.; Bishop, P. M.; and Martin, B. B. 1973. Evidence of a replete caste in the fire ant, *Solenopsis invicta*. Ann. Entomol. Soc. Am. 66: 233–234.

252. ———; Vandenburgh, M. K.; and St. Romain, M. K. 1976. Testes degeneration in the red imported fire ant, *Solenopsis invicta*. J. Ga. Entomol. Soc. 11: 83–88.

253. ———; Wojcik, D. P.; Craig, C. H.; and Mitchell, J. A. 1976. Ants of Mobile County, Ala., as monitored by bait transects. J. Ga. Entomol. Soc. 11: 191–197.

254. Glasgow, L. L. 1958. Studies on the effect of the imported fire ant control program on wildlife in Louisiana. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 12: 250–255.

255. ———. 1959. Wildlife and the fire ant program. Trans. North Am. Wildl. Nat. Resour. Conf. 24: 142–146.

256. Glick, B. 1974. Antibody mediated immunity in the presence of mirex and DDT. Poult. Sci. 53: 1476–1485.

257. Goetsch, W. 1934. Untersuchungen über die Zusammenarbeit im Ameisenstaat. Z. Morph. Oekol. Tiere 28: 319–401.

258. Graves, J. B.; Hyde, K. M.; Bonner, F. L.; Schilling, P. E.; and Fowler, J. F. 1977. Effects of mirex on crawfish production in rice fields. La. Agric. 20: 8–10.

259. Green, H. B. 1951. The imported fire ant in northeast Mississippi. Proc. Assoc. South. Agric. Workers 48: 94.

260. ———. 1952. Biology and control of the imported fire ant in Mississippi. J. Econ. Entomol. 45: 593–597.

261. ———. 1959. Imported fire ant mortality due to cold. J. Econ. Entomol. 52: 347.

262. ———. 1962. On the biology of the imported fire ant. J. Econ. Entomol. 55: 1003–1004.

263. ———. 1967. The imported fire ant in Mississippi. Miss. Farm Res. 30(1): 1, 7, map.

264. ———. 1967. The imported fire ant in Mississippi. Miss. State Univ. Exp. Stn. Bull. 737, 23 pp.

265. ———, and Hutchins, R. E. 1957. A progress report on imported fire ant studies in Mississippi. Bull. Entomol. Soc. Am. 3: 39–40.

266. ———, and Hutchins, R. E. 1958. A progress report on imported fire ant studies in Mississippi. Proc. Assoc. South. Agric. Workers 55: 118.

267. ———, and Hutchins, R. E. 1958. New tests show dieldrin, heptachlor death to fire ants applied in any fashion. South. Florist Nurseryman 70(48): 63, 70.

268. ———, and Hutchins, R. E. 1958. Progress made on control of ants in pastures. Miss. Farm Res. 21(1): 1–8.

269. ———, and Hutchins, R. E. 1960. Laboratory study of toxicity of imported fire ants to bluegill fish. J. Econ. Entomol. 53: 1137–1138.

270. Griffin, G. W., and Price, A. K. 1964. Perchloro cage compounds. I. Structural studies. J. Org. Chem. 29: 3192–3196.

271. Gross, H. W., Jr. 1967. Ecology and control of the striped earwig, *Labidura riparia* (Labiduridae: Dermaptera) in Louisiana. 78 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

272. ———, and Spink, W. T. 1969. Responses of striped earwigs following applications of heptachlor and mirex, and predator-prey relationships between imported fire ants and striped earwigs. J. Econ. Entomol. 62: 686–689.

273. Grothaus, R. H.; Jackson, S. C.; Haskins, J. R.; and Sims, G. L. 1973. Environmentally improved methods of fire ant control for high

maintenance areas. U.S. Naval Med. Field Res. Lab Rep. Vol. 23(7): 1–4. Camp Lejeune, N. C.

H

274. Haeussler, G. J., and Leiby, R. E. 1952. Survey of insect pests. U.S. Dep. Agric. Yearb. Agric. 1952, pp. 444–449.

275. Hallett, D. J.; Norstrom, R. J.; Onuska, F. I.; Comba, M. E.; and Sampson, R. 1976. Mass spectral confirmation and analysis by the Hall detector of mirex and photomirex in herring gulls from Lake Ontario. J. Agric. Food Chem. 24: 1189–1193.

276. Harris, W. G. 1971. The relationship of the imported fire ant, *Solenopsis saevissima* (F. Smith), to populations of the lone star tick, *Amblyomma americanum* (Linneaus), and the effects of mirex on populations of arthropods. 136 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

277. ———, and Burns, E. C. 1972. Predation on the lone star tick by the imported fire ant. Environ. Entomol. 1: 362–365.

278. Hawthorne, J. C.; Ford, J. H.; Loftis, C. D.; and Markin, G. P. 1974. Mirex in milk from southeastern United States. Bull. Environ. Contam. Toxicol. 11: 238–240.

279. ———; Ford, J. H.; and Markin, G. P. 1974. Residues of mirex and other chlorinated pesticides in commercially raised catfish. Bull. Environ. Contam. Toxicol. 11: 258–264.

280. Hays, K. L. 1958. The present status of the imported fire ant in Argentina. J. Econ. Entomol. 51: 111–112.

281. ———. 1959. Ecological observations on the imported fire ant, *Solenopsis saevissima richteri* Forel, in Alabama. J. Ala. Acad. Sci. 30(4): 14–18.

282. Hays, S. B. 1958. Food habits of the imported fire ant, *Solenopsis saevissima richteri* Forel, and poison baits for its control. 49 pp. M.S. thesis, Alabama Polytechnic Institute, Auburn.

283. ———, and Arant, F. S. 1960. Insecticidal baits for control of the imported fire ant, *Solenopsis saevissima richteri*. J. Econ. Entomol. 53: 188–191.

284. ———, and Hays, K. L. 1959. Food habits of *Solenopsis saevissima richteri* Forel. J. Econ. Entomol. 52: 445–447.

285. Heath, R. G., and Spann, J. W. 1973. Reproduction and related residues in birds fed mirex. Pesticides in the Environment: Continuing Controversy, Pap. Inter-Am. Conf. Toxicol. Occup. Med. 8: 421–435.

286. Henderson, D. K. 1966. Decca system looks good for large scale ag. operations. Am. Aviat. 30(3): 30–34.

287. Hendrickson, C. M., and Bowden, J. A. 1975. *In vitro* inhibition of rabbit muscle lactate dehydrogenase by mirex and kepone. J. Agric. Food Chem. 23: 407–409.

288. ———, and Bowden, J. A. 1975. A proposed mechanism for the *in vitro* inhibition of NADH-linked dehydrogenases by halogenated hydrocarbon pesticides: Evidence for an "association complex" for lactic acid. Fed. Proc. 34: 506.

289. ———, and Bowden, J. A. 1976. *In vitro* inhibition of lactate dehydrogenase by insecticidal polychlorinated hydrocarbons. I. Mechanism of inhibition: Possible association of reduced nicotinamide adenine dinucleotide with mirex. J. Agric. Food Chem. 24: 241–244.

290. ———; Bowden, J. A.; and Allen, R. S. 1973. The *in-vitro* inhibition of lactic dehydrogenase by selected polychlorinated pesticides. Fed. Proc. 32: 235.

291. Hensley, S. D. 1971. Management of sugarcane borer populations in Louisiana, a decade of change. Entomophaga 16: 133–146.

292. ———; Long, W. H.; Roddy, L. R.; McCormick, W. J.; and Concienne, E. J. 1961. Effects of insecticides on the predaceous arthropod fauna of Louisiana sugarcane fields. J. Econ. Entomol. 54: 146–149.

293. Hermann, H. R., and Blum, M. S. 1965. Morphology and histology of the reproductive system of the imported fire ant queen, *Solenopsis saevissima richteri*. Ann. Entomol. Soc. Am. 58: 81–89.

294. ———, and Blum, M. S. 1967. The morphology and histology of the hymenopterous poison apparatus. II. *Pogonomyrmex badius* (Formicidae). Ann. Entomol. Soc. Am. 60: 661–668.

295. ———; Blum, M. S.; and Hunt, A. N. 1970 (1971). Myrmecophilous arthropods associated with the imported fire ant, *Solenopsis saevissima* (Hymenoptera: Formicidae). Proc. La. Acad. Sci. 33: 13–18.

296. Herzog, D. C.; Reagan, T. E.; Sheppard, D. C.; Hyde, K. M.; Nilakle, S. S.; Hussein, M. Y. B.; McMahan, M. L.; Thomas, R. C.; and Newsome, L. D. 1976. *Solenopsis invicta* Buren—influence on Louisiana pasture soil chemistry (Hymenoptera: Formicidae). Environ. Entomol. 5: 160–162.

297. Hill, E. P., and Lovett, J. W. 1975. Pesticide residues in beaver and river otter from Alabama, USA. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 29: 365–369.

298. Hill, P., III. 1962. The effects on bobwhite and coturnix quail from ingestion of Kepone-killed crickets, Kepone-peanut butter baits and imported fire ants. 51 pp. M.S. thesis, Auburn University, Auburn.

299. Hirschmann, W. 1972. Gangsystematik der Parasitiformer. Teil 103. Von J. C. Moser gesammelte Uropodiden aus Nordamerika und 2 neue *Oplistis-arten*. Acarologie 17: 28–29; Abbildung 36–37.

300. Holden, C. 1976. Mirex: Persistent pesticide on its way out. Science 194: 301–303.

301. Holldobler, B. 1973. Zur Ethologie der chemischen Verständigung Beiameisen. Nova Acta Leopoldina 37: 259–292. [English abstract in Chem. Abstr. 80(23): 130691.]

302. Hollister, T. A.; Walsh, G. E.; and Forester, J.

1975. Mirex and marine unicellular algae—accumulation, population growth, and oxygen evolution. Bull. Environ. Contam. Toxicol. 14: 753–759.

303. Holloman, M. E.; Layton, B. R.; Kennedy, M. V.; and Swanson, C. R. 1975. Identification of the major thermal degradation products of the insecticide mirex. J. Agric. Food Chem. 23: 1011–1012.

304. Holmstead, R. L. 1976. Studies of the degradation of mirex with an iron (II) porphyrin model system. J. Agric. Food Chem. 24: 620–624.

305. Horton, P. M. 1973. A study of field populations and behavior of the red imported fire ant, *Solenopsis invicta* Buren, in South Carolina. 89 pp. M.S. thesis, Clemson University, Clemson.

306. ———, and Hays, S. B. 1974. Occurrence of brood stages and adult castes in field colonies of the red imported fire ant in South Carolina. Environ. Entomol. 3: 656–658.

307. ———; Hays, S. B.; and Holman, J. R. 1975. Food carrying ability and recruitment time of the red imported fire ant. J. Ga. Entomol. Soc. 10: 207–213.

308. Howard, D. F. 1974. Nest sanitation and necrophoric behavior of the red imported fire ant, *Solenopsis invicta*. 94 pp. M.S. thesis, Florida State University, Tallahassee.

309. ———, and Tschinkel, W. R. 1976. Aspects of necrophoric behavior in the red imported fire ant, *Solenopsis invicta*. Behaviour 56: 157–180.

310. Howard, F. W. 1975. Arthropod population dynamics in pastures treated with mirex-bait to suppress red imported fire ant populations. 162 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

311. Hubbard, M. D. 1974. Influence of nest material and colony odor on digging in the ant, *Solenopsis invicta* (Hymenoptera : Formicidae). J. Ga. Entomol. Soc. 9: 127–132.

312. Hume, W. E. 1958. Georgians discuss selling fire ants. Am. Nurseryman 108(2) : 24.

313. Hung, A. C. F. 1974. Ants recovered from refuse pile of the pyramid ant, *Conomyrma insana* (Buckley) (Hymenoptera : Formicidae). Ann. Entomol. Soc. Am. 67: 522–523.

314. ———; Norton, W. N.; and Vinson, S. B. 1975. Gynandromorphism in the red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera : Formicidae). Entomol. News 86: 45–46.

315. ———, and Vinson, S. B. 1975. Notes on the male reproductive system in ants (Hymenoptera : Formicidae). J. N.Y. Entomol. Soc. 83: 192–197.

316. ———, and Vinson, S. B. 1977. Interspecific hybridization and caste specificity of protein in fire ant. Science 196: 1458–1460.

317. ———; Vinson, S. B.; and Summerlin, J. W. 1974. Male sterility in the red imported fire ant, *Solenopsis invicta*. Ann. Entomol. Soc. Am. 67: 909–912.

318. Hunt, A. N., and Hermann, H. R. 1973. Insect envenomization: Some hematological reactions in guinea pigs to three hymenopterous venoms. J. Ga. Entomol. Soc. 8: 249–264.

319. Hunter, J. E., III. 1974. Mites of the genus *Oplitis* Berlese (Acarina : Uropodidae) associated with ants (Hymenoptera : Formicidae) in the southeastern United States. 105 pp. M.S. thesis, North Carolina State University, Raleigh.

320. ———, and Farrier, M. H. 1975. Mites of the genus *Oplitis* (Acarina : Uropodidae) associated with ants (Hymenoptera : Formicidae) in the southeastern United States (part 1). Acarologia 17: 595–624.

321. ———, and Farrier, M. H. 1976. Mites of the genus *Oplitis* Berlese (Acarina : Uropodidae) associated with ants (Hymenoptera : Formicidae) in the southeastern United States. Part II. Acarologia 18: 20–50.

322. Hunter, P. E., and Costa, M. 1971. Description of *Gymnolaelaps shealsi* n. sp. (Acarina : Mesostigmata) associated with the imported fire ant. J. Ga. Entomol. Soc. 6: 51–53.

323. Hutchins, R. E., and Green, H. B. 1957. The imported fire ant. Miss. Agric. Exp. Stn. Inf. Sheet 562, 2 pp.

324. ———, and Green, H. B. 1957. Research staff begins imported fire ant study. Mississippi Farm Res. 20(5) : 1, 8.

325. Hyde, K. M. 1972. Studies of the responses of selected wildlife species to mirex bait exposure. 186 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

326. ———; Graves, J. B.; Fowler, J. F.; Bonner, F. L.; Impson, J. W.; Newsom, J. D.; and Haygood, J. 1973. Accumulation of mirex in food chains. La. Agric. 17(1) : 10–12.

327. ———; Graves, J. B.; Schilling, P. E.; and Bonner, F. L. 1972. The influence of mirex bait on production and survival of Louisiana red crawfish, *Procambarus clarki* (Girard). Proc. Annu. Conf. Southeast. Assoc. Game Fish. Comm. 26: 473–483.

328. ———; Graves, J. B.; Watts, A. B.; and Bonner, F. L. 1973. Reproductive success of mallard ducks fed mirex. J. Wildl. Manage. 37: 479–484.

329. ———; Stokes, S.; Fowler, J. F.; Graves, J. B.; and Bonner, F. L. 1964. The effect of mirex on channel catfish production. Trans. Am. Fish. Soc. 103: 366–369.

I

330. Innes, J. R.; Ulland, B. M.; Valerio, M. G.; Petrucelli, L.; Fishbein, L.; Hart, E. R.; Pallatta, A. J.; Bates, R. R.; Falk, H. L.; Gart, J. J.; Klein, M.; Mitchell, I.; and Peters, J. 1969. Bioassay of pesticides and industrial chemicals for tumorigenicity in mice: A preliminary note. J. Natl. Cancer Inst. 42: 1101–1114.

331. International Agency for Research on Cancer. 1974. Monographs on the evaluation of carcinogenic risk of chemicals to man. Vol. 5. Some organo chlorine pesticides. Int. Agency Res.

Cancer Mongr. 5: 1–241.

332. Irving, G. W., Jr. 1970. Fire ant: Whose pest? Science 169: 630.

333. Isensee, A. R. 1976. Variability of aquatic model ecosystem derived data. Int. J. Environ. Stud. 10: 35–41.

334. Iverson, F. 1976. Induction of paraoxon dealkylation by hexachlorobenzene (HCB) and mirex. J. Agric. Food Chem. 24: 1238–1241.

335. Ivie, G. W.; Dorough, H. W.; and Alley, E. G. 1974. Photodecomposition of mirex on silica gel chromatoplates exposed to natural and artificial light. J. Agric. Food Chem. 22: 933–936.

336. ———; Dorough, H. W.; and Bryant, H. E. 1974. Fate of ^{14}C-labelled mirex in Japanese quail. Bull. Environ. Contam. Toxicol. 11: 129–135.

337. ———; Gibson, J. R.; Bryant, H.; Begin, J.; Barnett, J.; and Dorough, H. 1974. Accumulation, distribution, and excretion of mirex-^{14}C in animals exposed for long periods to the insecticide in the diet. J. Agric. Food Chem. 22: 646–653.

J

338. James, F. K., Jr.; Pence, H. L.; Driggers, D. P.; Jacobs, R. L.; and Horton, D. E. 1976. *In-vivo* and *in-vitro* studies of human reactions to fire ant venom. J. Allergy Clin. Immunol. 57: 209.

339. ———; Pence, H. L.; Driggers, D. P.; Jacobs, R. L.; and Horton, D. E. 1976. Imported fire ant hyper-sensitivity, studies of human reactions to fire ant venom. J. Allergy Clin. Immunol. 58 (Part 1): 110–120.

340. Jenkins, J. H. 1963. A review of five years research on the effects of the fire ant control program on selected wildlife population. Bull. Ga. Acad. Sci. 21: 3.

341. Johnson, A. S. 1961. Antagonistic relationships between ants and wildlife with special reference to imported fire ants and bobwhite quail in the southeast. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 15: 88–107.

342. ———. 1962. Antagonistic relationships between ants and wildlife, with special reference to the imported fire ant and bobwhite quail in the southeastern United States. 100 pp. M.S. thesis, Auburn University, Auburn.

343. Johnson, A. W., and Hays, K. L. 1973. Some predators of immature Tabanidae (Diptera) in Alabama. Environ. Entomol. 2: 1116–1117.

344. Johnson, E. L. 1976. Administrator's decision to accept plan of Mississippi Authority and order suspending hearing for the pesticide chemical mirex. Fed. Regist. 41(251): 56694–56704.

345. Johnson, J. M.; Dollar, A. M.; and Cox, D. C. 1976. Mirex monitoring in Hawaii, a cooperative venture. J. Environ. Health 38: 254–258.

346. Johnson, O. 1972. Pesticides '72. Chem. Week, July 26, p. 25.

347. Jones, A. S., and Hodges, C. S. 1974. Persistence of mirex and its effects on soil microorganisms. J. Agric. Food Chem. 22: 435–439.

348. Jouvenaz, D. P.; Banks, W. A.; and Lofgren, C. S. 1974. Fire ants: Attraction of workers to queens' secretions. Ann. Entomol. Soc. Am. 67: 442–444.

349. ———; Banks, W. A.; Lofgren, C. S.; and Hicks, D. M. 1974. Antioxidants for corncob grit-soybean oil bait used to control imported fire ants (Hymenoptera: Formicidae). Fla. Entomol. 57: 268.

350. ———; Blum, M. S.; and MacConnell, J. G. 1972. Antibacterial activity of venom alkaloids from the imported fire ant, *Solenopsis invicta* Buren. Antimicrob. Agents Chemother. 2: 291–293.

351. Jung, R. C., and Derbes, V. J. 1957. The imported fire ant *Solenopsis saevissima* var. *richteri*, as an agent of disease. Am. J. Trop. Med. Hyg. 6: 372–373.

352. ———; Derbes, V. J.; and Burch, A. D. 1963. Skin response to solenamine, a haemolytic component of fire ant venom. Derm. Trop. 2: 241–244.

K

353. Kaiser, K. L. E. 1974. Mirex, an unrecognized contaminant of fishes from Lake Ontario. Science 185: 523–525.

354. Kecher, R. M.; Komarova, L. I.; and Zefirov, N. S. 1973. Perchlorodihomocubane in a nucleophilic substitution reaction. Zh. Org. Khim. 9: 1757. [In Russian. English abstract in Chem. Abstr. 79(19): 115202.]

355. ———; Shibinskaya, M. B.; Gallai, O. S.; and Zefirov, N. S. 1974. Reduction of polyhalogenated compounds. Zh. Org. Khim. 10: 411–412. [In Russian. English abstract in Chem. Abstr. 80(25): 145546.]

356. Kendall, M. W. 1976. Acute light and electron microscopy histo-pathologic alterations induced in rat liver by the fire ant poison mirex. Anat. Rec. 184: 444.

357. Kennedy, D., chairman. 1975. Pest control: An assessment of present and alternative technologies. Vol 1. Contemporary pest control practice and prospects: The report to the executive committee. 506 pp. Natl. Acad. Sci., Washington.

358. Kennedy, M. W.; Pittmann, K. A.; and Stein, V. M. 1975. Fate of ^{14}C-mirex in the female Rhesus monkey. Toxicol. Appl. Pharmacol. 33: 161–162.

359. Khan, A. R. 1966. Studies on the rearing, biology and control of the imported fire ant. 91 pp. Ph. D. dissertation, Mississippi State University, Mississippi State.

360. ———; Green, H. B.; and Brazzel, J. R. 1967. Laboratory rearing of the imported fire ant. J. Econ. Entomol. 60: 915–917.

361. Khera, K. S.; Villeneuve, D. C.; Terry, G.; Panopio, L.; Nash, L.; and Trivett, G. 1976. Mirex, a teratogenicity dominant lethal and tissue distribution study in rats. Food Cosmet. Toxicol. 14: 25–29.

362. Kirk, J. K. 1969. Mirex: Tolerances for residues. Fed. Regist. 34(21): 1553.

363. Knell, J. D.; Allen, G. E.; and Hazard, E. I. 1977.

Light and electron microscope study of *Thelohania solenopsae* n. sp. (Microsporida: Protozoa) in the red imported fire ant, *Solenopsis invicta*. J. Invertebr. Pathol. 29: 192–200.

364. Kobylinski, G. J., and Livingston, R. J. 1975. Movement of mirex from sediment and uptake by the hogchoker, *Trinectes maculatus*. Bull. Environ. Contam. Toxicol. 14: 692–698.

365. Koch, R. B., and Desaiah, D. 1974. Inhibition of *Escherichia coli* magnesium ion stimulated ATPase. Synergism between a fire ant, *Solenopsis richteri*, abdomen factor and a photoreduction product of mirex. Biochem. Biophys. Acta 367: 259–263.

366. ———, and Desaiah, D. 1975. Partial characterization of ATPase activating and inactivating components from the abdomen of the fire ant, *Solenopsis richteri*. Fed. Proc. 34: 518.

367. ———, and Desaiah, D. 1975. Sensitivity of ATPase activities to fire ant venom and abdomen preparation. Life Sci. 17: 1315–1320.

368. Koenig, C. C. 1975. Effects of DDT and mirex alone and in combination on the reproduction of a salt marsh cyprinodont fish, *Adinia xenica*. 145 pp. Ph. D. dissertation, Florida State University, Tallahassee.

369. Krafchick, B. 1959. A comparative study of the male genitalia of North American ants (Formicidae) with emphasis on generic differences. 78 pp. Ph. D. dissertation, University of Maryland, College Park.

370. Krause, R. T. 1973. Determination of several chlorinated pesticides by the AOAC: Multiresidue method with additional quantitation of perthane after dehydrochlorination. Collaborative study. J. Assoc. Off. Anal. Chem. 56: 721–727.

371. Kreitzer, J. F. 1974. Residues of organochlorine pesticides, mercury, and PCB's in mourning doves from eastern United States, 1970–71. Pestic. Monit. J. 7: 195–199.

372. Kricher, J. C.; Urey, J. C.; and Hawes, M. L. 1975. The effects of mirex and methoxychlor in the growth and productivity of *Chlorella pyrenoidosa*. Bull. Environ. Contam. Toxicol. 14: 617–620.

373. Kutz, F. W.; Yobs, A. R.; Johnson, W. G.; and Wiersma, G. B. 1974. Mirex residues in human adipose tissue. Environ. Entomol. 3: 882–884.

L

374. Lane, R. H. 1973. The influence of food processing on mirex. 81 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

375. ———; Grodner, R. M.; and Graves, J. L. 1976. Irradiation studies of mallard duck eggs material containing mirex. J. Agric. Food Chem. 24: 192–193.

376. Lawrence, R. S.; Keil, J. E.; Brown, L. L.; and Jackson, H. B. 1973. The imported fire ant: A newly recognized public health problem in South Carolina. J. S.C. Med. Assoc. 69(9): 319–321.

377. Learmonth, G. S., and Thwaite, D. G. 1970. Flammability of plastics. III. Reactions between antimony trioxide and organic halogenated flame retardants with reference to their performance in a crosslinked polyester resin. Brit. Polym. J. 2: 104–109.

378. Lee, B. J. 1974. Effects of mirex on litter organisms and leaf decomposition in a mixed hardwood forest in Athens, Georgia. J. Environ. Qual. 3: 305–310.

379. Lee, J. H.; Nash, C. E.; and Sylvester, J. R. 1975. Effects of mirex and methoxychlor on striped mullet. U.S. Environ. Prot. Agency, Off. Res. Dev. Rep. EPA-6603/75–015, 18 pp. [1974, U.S. Natl. Tech. Inf. Serv. PB Rep. 241635, 26 pp.]

380. ———; Sylvester, J. R.; and Nash, C. E. 1975. Effects of mirex and methoxychlor on juvenile and adult striped mullet, *Mugil cephalus*. Bull. Environ. Contam. Toxicol. 14: 180–186.

381. Leffler, C. W. 1975. Effects of ingested mirex and DDT on juvenile *Calinectes sapidus* Rathbun. Environ. Pollut. 8: 283–300.

382. Lennartz, F. E. 1973. Modes of dispersal of *Solenopsis invicta* from Brazil into the continental United States—a study in spatial diffusion. 242 pp. M.S. thesis, University of Florida, Gainesville.

383. Leposky, G. 1975. The intriguing ant. Fla. Nat. 48(5): 16–18.

384. Levy, R.; Carroll, J. F.; Chiu, Y. J.; and Banks, W. A. 1974. Toxicity of chemical baits against the red imported fire ant, *Solenopsis invicta*. Fla. Entomol. 57: 155–159.

385. ———; Chiu, Y. J.; and Banks, W. A. 1973. Laboratory evaluation of candidate bait toxicants against the imported fire ant, *Solenopsis invicta*. Fla. Entomol. 56: 141–146.

386. ———; Jouvenaz, D. P.; and Cromroy, H. L. 1974. Tolerance of three species of insects to prolonged exposures to ozone. Environ. Entomol. 3: 184–185.

387. ———; VanRinsvelt, H. A.; and Cromroy, H. L. 1974. Relative concentrations of major and minor trace elements in adult and immature stages of the red imported fire ant determined by ion induced X-ray fluorescence. Fla. Entomol. 57: 269–273.

388. ———; VanRinsvelt, H. A.; and Cromroy, H. L. 1975. Major and trace element analysis in red imported fire ant queens by ion induced X-ray fluorescence. Fla. Entomol. 58: 289–290.

389. Lewis, R. G.; Hanisch, R. C.; Macleod, K. E.; and Sovocool, G. W. 1976. Photochemical confirmation of mirex in the presence of polychlorinated biphenyls. J. Agric. Food Chem. 24: 1030–1035.

390. Life. 1958. Fire ant plague. Life 45(2): 117–118.

391. Lind, N. K., and Read, G. W. 1977. Histamine release from rat mast cells *in-vitro* by fire ant venoms and a venom piperidine. Fed. Proc. 36: 1022.

392. Livingston, B. P. 1958. Fire ant program, State of Alabama. Fla. Entomol. 41: 190.

393. Lloyd, F. A.; Cain, C. E.; Mast, J.; Crittenden,

J.; and Theide, H. 1975. Results of pesticide analysis of human maternal blood. J. Miss. Acad. Sci. 1973/1974 19: 78–84.

394. Lockey, R. F. 1974. Systemic reactions to stinging ants. J. Allergy Clin. Immunol. 54: 132–146.

395. Loding, H. P. 1929. An ant (*Solenopsis saevissima richteri* Forel). U.S. Dep. Agric. Insect Pest Surv. Bull. 9: 241.

396. Lofgren, C. S. 1968. Toxic bait studies with the imported fire ant, *Solenopsis saevissima richteri* Forel. 67 pp. Ph. D. dissertation, University of Florida, Gainesville.

397. ———; Adler, V. E.; Banks, W. A.; and Pierce, N. 1964. Control of imported fire ants with chlordane. J. Econ. Entomol. 57: 331–333.

398. ———; Adler, V. E.; and Barthel, W. F. 1961. Effect of some variations in formulation or application procedure on control of the imported fire ant with granular heptachlor. J. Econ. Entomol. 54: 45–47.

399. ———; Banks, W. A.; and Glancey, B. M. 1975. Biology and control of imported fire ants. Annu. Rev. Entomol. 20: 1–30.

400. ———; Banks, W. A.; and Stringer, C. E. 1964. Toxicity of various insecticides to the imported fire ant. U.S. Dep. Agric., Agric. Res. Serv. [Rep.] 81–11, 15 pp.

401. ———; Bartlett, F. J.; and Stringer, C. E. 1961. Imported fire ant toxic bait studies. The evaluation of various food materials. J. Econ. Entomol. 54; 1096–1100.

402. ———; Bartlett, F. J.; and Stringer, C. E. 1963. Imported fire ant toxic bait studies: Evaluation of carriers of oil baits. J. Econ. Entomol. 56: 62–66.

403. ———; Bartlett, F. J.; and Stringer, C. E. 1964. The acceptability of some fats and oils as food to imported fire ants. J. Econ. Entomol. 57: 601–602.

404. ———; Bartlett, F. J.; Stringer, C. E.; and Banks, W. A. 1964. Imported fire ant toxic bait studies: Further tests with granulated mirex-soybean oil bait. J. Econ. Entomol. 57: 695–698.

405. ———, and Stringer, C. E. 1964. The effect of heptachlor and chlordane on the foraging activity of imported fire ants. J. Econ. Entomol. 57: 235–237.

406. ———; Stringer, C. E.; Banks, W. A.; and Bishop, P. M. 1967. Laboratory tests with candidate bait toxicants against the imported fire ant. U.S. Dep. Agric., Agric. Res. Serv. [Rep.] 81–14, 25 pp.

407. ———; Stringer, C. E.; and Bartlett, F. J. 1962. Imported fire ant toxic bait studies: GC–1283, a promising toxicant. J. Econ. Entomol. 55: 405–407.

408. ———; Stringer, C. E., Jr.; Bartlett, F. J.; Banks, W. A.; and Barthel, W. F. 1965. Dual low dosage applications of heptachlor for control of the imported fire ant. Fla. Entomol. 48: 265–270.

409. ———, and Weidhaas, D. E. 1972. On the eradication of imported fire ants: A theoretical appraisal. Bull. Entomol. Soc. Am. 18: 17–20.

410. Lok, J. B.; Cupp, E. W.; and Blomquist, B. J. 1975. Cuticular lipids of the imported fire ants, *Solenopsis invicta* and *Solenopsis richteri*. Insectic. Biochem. 5: 821–829.

411. Long, E. J. 1957. Battle-lines are forming to oppose an unwelcome immigrant. Nat. Mag. 50: 302–304.

412. Long, W. H.; Cancienne, E. A.; Concienne, E. J.; Dobson, R. N.; and Newsom, L. D. 1958. Fire-ant eradication program increases damage by the sugarcane borer. Sugar Bull. 37: 62–63.

413. Longcore, J. R., and Mulhern, B. M. 1973. Organochlorine pesticides and polychlorinated biphenyls is black duck eggs from the United States and Canada—1971. Pestic. Monit. J. 7: 62–66.

414. Lowe, J. I.; Parrish, P. R.; Wilson, A. J., Jr.; Wilson, P. D.; and Duke, T. W. 1971. Effects of mirex on selected estuarine organisms. Trans. North Am. Wildl. Nat. Res. Conf. 36: 171–186.

415. ———; Wilson, P. D.; and Davison, R. B. 1970. Effects of mirex on crabs, shrimp, and fish. U.S. Dep. Inter. Circ. 335, pp. 22–23.

416. Ludke, J. L.; Finley, M. T.; and Lusk, L. 1971. Toxicity of mirex to crayfish, *Procambarus blandingi*. Bull. Environ. Contam. Toxicol. 6: 89–96.

417. Lue, K. Y. 1976. Decomposition properties of the mirex fire-ant bait and its ecological effects on selected biotic systems. 89 pp. Ph. D. dissertation, Mississippi State University, Mississippi State.

418. Lusk, C. I. 1972. Uptake and release of DDT, toxaphene, and mirex in channel catfish (*Ictalurus punctatus*) under chronic conditions of exposure. 18 pp. M.S. thesis, Mississippi State University, Mississippi State.

419. Lyle, C., and Fortune, I. 1948. Notes on an imported fire ant. J. Econ. Entomol. 41: 833–834.

M

420. McBee, E. T.; Dilling, W. L.; and Braendlin, H. P. 1962. Pentacyclo $[5.3.0.0^{2,6}.0^{3,9}.0^{4,8}]$ decane. J. Org. Chem. 27: 2704–2705.

421. ———; Idol, J. D.; and Roberts, C. W. 1955. Chemistry of hexachlorocyclopentadiene. III. Synthesis of bis-(pentachlorocyclopentadienyl) and related compounds. J. Am. Chem. Soc. 77: 4375–4378.

422. ———; Roberts, C. W.; Idol, J. D.; and Earle, R. H., Jr. 1956. An investigation of the chlorocarbon $C_{10}C_{12}$, m.p. 485°, and the ketone $C_{10}Cl_{10}O$, m.p. 349°. J. Am. Chem. Soc. 78: 1511–1512.

423. McCluskey, E. S. 1965. Circadian rhythms in male ants of five diverse species. Science 150: 1037–1039.

424. ———. 1974. Generic diversity in phase of rhythm in Myrmicine ants. J. N.Y. Entomol. Soc. 82: 93–102.

425. MacConnell, J. G.; Blum, M. S.; Buren, W. F.; Williams, R. N.; and Fales, H. M. 1976. Fire

ant venoms: Chemataxonomic correlations with alkaloidal compositions. Toxicon 14: 69–78.

426. ———; Blum, M. S.; and Fales, H. M. 1970. Alkaloid from fire ant venom: Identification and synthesis. Science 168: 840–841.

427. ———; Blum, M. S.; and Fales, H. M. 1971. The chemistry of fire ant venom. Tetrahedron 26: 1129–1139.

428. ———; Williams, R. N.; Brand, J. M.; and Blum, M. S. 1974. New alkaloids in the venom of fire ants. Ann. Entomol. Soc. Am. 67: 134–135.

429. McCorkle, F. M., Jr. 1972. Studies on mirex toxicity, its residue levels, and effects on succinic dehydrogenase activity in *Gambusia affinis* and *Lepomis cyanellus*. 28 pp. M.S. thesis, Mississippi State University, Mississippi State.

430. ———, and Yarbrough, J. D. 1974. The *in vitro* effects of mirex on succinic dehydrogenase activity in *Gambusia affinis* and *Lepomis cyanellus*. Bull. Environ. Contam. Toxicol. 11: 364–370.

431. McEachern, D. M. 1961. The imported fire ant in Texas. Fitofilo 14(29) : 16–18.

432. MacFarlane, J.; Dirks, T.; and Uk, S. 1975. Symptoms of mirex, dieldrin, and DDT poisoning in the field cricket, *Gryllus pennsylvanicus* Burmeister, and effect on activity of the central nerve cord. Pestic. Biochem. Physiol. 5: 57–64.

433. McKenzie, M. D. 1970. Fluctuations in abundance of the blue crab and factors affecting mortalities. S.C. Wildl. Res. Dep. Tech. Rep. 1, 45 pp.

434. McLane, M. A. R.; Stickel, L. F.; Clark, E. R.; and Hughes, D. L. 1973. Organochlorine residues in woodcock wings—11 States—1970–71. Pestic. Monit. J. 7: 100–103.

435. Mahood, R. K.; McKenzie, M. D.; Middaugh, D. P.; Bollar, S. J.; Davis, J. R.; and Spitsbergen, D. 1970. A report on the cooperative blue crab study—South Atlantic States. U.S. Bur. Comm. Fish. Rep., 32 pp.

436. Mannix, D. P. 1958. The fire ants are coming. True Mag., Aug., pp. 64–67, 96.

437. Marak, G. E., and Wolken, J. J. 1965. An action spectrum for the fire ant (*Solenopsis saevissima*). Nature (London) 205: 1328–1329.

438. Markin, G. P. 1968. Handling techniques for large quantities of ants. J. Econ. Entomol. 61: 1744–1745.

439. ———; Collins, H. L.; and Davis, J. 1974. Residues of the insecticide mirex in terrestrial and aquatic invertebrates following a single aerial application of mirex bait—Louisiana—1971–72. Pestic. Monit. J. 8: 131–134.

440. ———; Collins, H. L.; and Dillier, J. H. 1972. Colony founding by queens of the red imported fire ant *Solenopsis invicta*. Ann. Entomol. Soc. Am. 65: 1053–1058.

441. ———; Collins, H. L.; and O'Neal, J. 1975. Control of the imported fire ants with winter applications of microencapsulated mirex bait. J. Econ. Entomol. 68: 711–712.

442. ———; Collins, H. L.; and Spence, J. H. 1975. Residues of the insecticide mirex following aerial treatment of Cat Island. Bull. Environ. Contam. Toxicol. 12: 233–240.

443. ———, and Dillier, J. H. 1971. The seasonal life cycle of the imported fire ant, *Solenopsis saevissima richteri*, on the gulf coast of Mississippi. Ann. Entomol. Soc. Am. 64: 562–565.

444. ———; Dillier, J. H.; and Collins, H. L. 1973. Growth and development of colonies of the red imported fire ant, *Solenopsis invicta*. Ann. Entomol. Soc. Am. 66: 803–808.

445. ———; Dillier, J. H.; Hill, S. O.; Blum, M. S.; and Hermann, H. R. 1971. Nuptial flight and flight ranges of the red imported fire ant, *Solenopsis saevissima richteri* (Hymenoptera: Formicidae). J. Ga. Entomol. Soc. 6: 145–156.

446. ———; Ford, J. H.; and Hawthorne, J. C. 1972. Mirex residues in wild populations of edible red crawfish (*Procambarus clarki*). Bull. Environ. Contam. Toxicol. 8: 369–374.

447. ———; Ford, J. H.; Hawthorne, J. C.; Spence, J. H.; Davis, J.; Collins, H. L.; and Loftis, D. C. 1972. The insecticide mirex and techniques for its monitoring. U.S. Anim. Plant Health Insp. Serv. [Rep.] 81–3, 19 pp.

448. ———; Hawthorne, J. C.; Collins, H. L.; and Ford, J. H. 1974. Levels of mirex and some other organochlorine residues in seafood from Atlantic and Gulf Coastal States. Pestic. Monit. J. 7: 139–143.

449. ———; Henderson, J. A.; and Collins, H. L. 1972. Aerial application of microencapsulated insecticide. Agric. Aviat. 14: 70–75.

450. ———, and Hill, S. O. 1971. Microencapsulated oil bait for control of the imported fire ant. J. Econ. Entomol. 64: 193–196.

451. ———; Mauffray; C. J.; and Adams, D. J. 1969. A granular applicator for very low volumes of microencapsulated insect bait or other materials. U.S. Dep. Agric., Agric. Res. Serv. [Rep.] 81–34, 4 pp.

452. ———; O'Neal, J.; and Collins, H. L. 1974. Effects of mirex on the general ant fauna of a treated area in Louisiana. Environ. Entomol. 3: 895–898.

453. ———; O'Neal, J.; and Collins, H. L. 1975. Control of the red imported fire ant with microencapsulated baits containing reduced amounts of mirex. J. Ga. Entomol. Soc. 10: 281–284.

454. ———; O'Neal, J.; and Dillier, J. H. 1975. Foraging tunnels of the red imported fire ant, *Solenopsis invicta*. J. Kans. Entomol. Soc. 48: 83–89.

455. ———; O'Neal, J.; Dillier, J. H.; and Collins, H. L. 1974. Regional variation in the seasonal activity of the imported fire ant, *Solenopsis saevissima richteri*. Environ. Entomol. 3: 446–452.

456. Mason, G. L. 1958. Food habits, baits, and attractions concerning the imported fire ant, *Solenopsis saevissima* var. *richteri* Forel. 45 pp. M.S. thesis, Mississippi State University, Mississippi State.

457. Maxwell, F. G., project coordinator. 1971. Levels of chlorinated hydrocarbons in catfish in Ala-

bama, Arkansas, Florida, Georgia, Louisiana, and Mississippi. Final report—draft. 61 pp. Mississippi State University, Mississippi State.

458. Medley, J. G.; Bond, C. A.; and Woodham, D. W. 1974. The cumulation and disappearance of mirex residues. I. In tissues of roosters fed four concentrations of mirex in their feed. Bull. Environ. Contam. Toxicol. 11: 217–223.

459. Mehendale, H. M. 1976. Mirex induced suppression of biliary excretion of polychlorinated biphenyls. Fed. Proc. 35: 375; and Toxicol. Appl. Pharmacol. 36: 369–381.

460. ———. 1977. Mirex-induced impairment of hepatobiliary function suppressed biliary excretion of imipramine and sulfobromophthalein. Drug Metab. Dispos. 5(1): 56–62.

461. ———; Chen, P. R.; Fishbein, L.; and Matthews, H. B. 1973. Effect of mirex on the activities of various rat hepatic mixed-function oxidases. Arch. Environ. Contam. Toxicol. 1: 245–254.

462. ———; Fishbein, L.; Fields, M.; and Matthews, H. B. 1972. Fate of mirex-^{14}C in the rat and plants. Bull. Environ. Contam. Toxicol. 8: 200–207.

463. Metcalf, R. L.; Kapoor, I. P.; Lu, P. Y.; Shuth, C. K.; and Sherman, P. 1973. Model ecosystem studies of the environmental fate of 6 organochlorine pesticides. Environ. Health Perspect. 4: 35–44.

464. Micks, D. W. 1960. Insects and other arthropods of medical importance in Texas. Tex. Rep. Biol. Med. 18: 624–635.

465. Mills, H. B., chairman. 1967. Report of committee on imported fire ant, NAS, to administrator, ARS, USDA. 15 pp. [Unpublished.]

466. Minton, S. 1959. Venomous animals, spiders, and insects. 2. Insects. Pest Control 27(2): 25.

467. Mississippi. Agricultural and Forestry Experiment Station. 1977. 26-Member council agrees, eradication impossible with present technology. Res. Highlights 40(3): 1.

468. Mitchell, W. G., and Barthel, W. F. 1965. Determination of heptachlor in heptachlor granules. J. Assoc. Off. Agric. Chem. 45: 113–115.

469. Morrill, W. L. 1974. Dispersal of red imported fire ants by water. Fla. Entomol. 57: 39–42.

470. ———. 1974. Production and flight of alate red imported fire ants. Environ. Entomol. 3: 265–271.

471. ———. 1976. A caliper for measuring fire ant mound dimensions. J. Ga. Entomol. Soc. 11: 346–348.

472. ———. 1976. Red imported fire ant control with mound drenches. J. Econ. Entomol. 69: 542–544.

473. ———. 1977. Overwinter survival of the red imported fire ant in central Georgia. Environ. Entomol. 6: 50–52.

474. ———. 1977. Red imported fire ant control with diazinon and chlorpyrifos drenches. J. Ga. Entomol. Soc. 12: 96–100.

475. ———. 1977. Red imported fire ant foraging in a greenhouse. Environ. Entomol. 6: 416–418.

476. ———, and Bass, J. A. 1976. Flight and survival of alate red imported fire ants after mirex treatment. J. Ga. Entomol. Soc. 11: 203–206.

477. ———, and Greene, G. L. 1975. Reduction of red imported fire ant populations by tillage. J. Ga. Entomol. Soc. 10: 162–164.

478. ———, and Whitcomb, W. H. 1972. A trap for alate imported fire ants. J. Econ. Entomol. 65: 1194–1195.

479. Moser, J. C. 1970. Pheromones of social insects. *In* D. L. Wood, R. M. Silverstein, and M. Nakajima (eds.), Control of Insect Behavior by Natural Products, pp. 161–178. Academic Press, New York.

480. ———, and Blum, M. S. 1960. The Formicidae of Louisiana. Insect Cond. La. 3: 48–50.

481. Mrak, E. M., chairman. 1969. Report of the Secretary's Commission on Pesticides and their relationship to environmental health. Parts I and II. 677 pp. U.S. Dep. Health Educ. Welfare.

482. Muncy, R. J., and Oliver, A. D., Jr. 1963. Toxicity of ten insecticides to the red crawfish, *Procambarus clarki* (Gerard). Trans. Am. Fish Soc. 92: 428–431.

483. Murphree, L. C. 1947. Alabama ants: Description, distribution and biology, with notes on the control of the most important household species. 144 pp. M.S. thesis, Mississippi State College, Mississippi State.

484. Murphy, R. T.; Barthel, W. F.; and Lofgren, C. S. 1962. Residual studies in connection with successive applications of heptachlor for imported fire ant eradication. J. Agric. Food Chem. 10: 5–7.

N

485. Naber, E. C., and Ware, G. W. 1965. Effect of Kepone and mirex on reproductive performance in the laying hen. Poult. Sci. 44: 875–880.

486. National Audubon Society. 1975. Econotes. Audubon 77(4): 105.

487. ———. 1976. Fire ant control. Audubon 78(1): 120.

488. ———. 1976. Mirex-Kepone. Audubon 78(5): 122.

489. ———. 1977. Mirex. Audubon 79(3): 151.

490. Nature (London). 1971. Fire ants defended. 230: 487–488.

491. Naves, M. A. 1974. Ecological manipulation affecting ant populations (Hymenoptera: Formicidae). 77 pp. M.S. thesis, University of Florida, Gainesville.

492. Navqi, S. M., and De la Cruz, A. A. 1973. Mirex incorporation in the environment: Residues in nontarget organisms—1972. Pestic. Monit. J. 7: 104–111.

493. ———, and De la Cruz, A. A. 1973. Mirex incorporation in the environment: Toxicity in selected fresh water organisms. Bull. Environ. Contam. Toxicol. 10: 305–308.

494. Neal, T. M., and Whitcomb, W. H. 1972. Odonata in the Florida soybean agroecosystem. Fla. Entomol. 55: 107–114.

495. Negm, A. A. 1966. Studies on natural control of the sugarcane borer, *Diatraea saccharalis* (Fab-

ricius), and the effects of certain insecticides on predaceous arthropods. 71 pp. M.S. thesis, Louisiana State University, Baton Rouge.

496. ———. 1968. Ecological studies of certain natural mortality factors of the sugarcane borer, *Diatraea saccharalis* (F.), in Louisiana. 84 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

497. ———, and Hensley, S. D. 1967. The relationship of arthropod predators to crop damage inflicted by the sugarcane borer. J. Econ. Entomol. 60: 1503–1506.

498. ———, and Hensley, S. D. 1969. Effect of insecticides on ant and spider populations in Louisiana sugarcane fields. J. Econ. Entomol. 62: 948–949.

499. ———, and Hensley, S. D. 1969. Evaluation of certain biological control agents of the sugarcane borer in Louisiana. J. Econ. Entomol. 62: 1008–1013.

500. ———, and Hensley, S. D. 1972. Role of predaceous arthropods of the sugarcane borer, *Diatraea saccharalis* (F.), in Louisiana. Proc. 14th Congr. Int. Soc. Sugarcane Tech., pp. 445–453.

501. Newcomer, J. S., and McBee, E. T. 1949. The chemical behavior of hexachlorocyclopentadiene. II. Condensation with trichloroethylene. J. Am. Chem. Soc. 71: 952–955.

502. Newsom, L. D.; Spink, W. T.; and Warter, S. 1959. Effect of the fire ant eradication program on the fauna of rice fields. Insect Cond. La. 2: 8–14.

503. Newsweek. 1976. The fire ants. Apr. 26, pp. 71.

504. Nickerson, J. C. E. 1976. Ecology and behavior of *Conomyrma insana*. 105 pp. Ph. D. dissertation, University of Florida, Gainesville.

505. ———; Whitcomb, W. H.; Bhatkar, A. P.; and Naves, M. A. 1975. Predation on founding queens of *Solenopsis invicta* by workers of *Conomyrma insana*. Fla. Entomol. 58: 75–82.

506. ———; Whitcomb, W. H.; and Dekle, G. W. 1974. *Eriococcus smithii* (Eriococcidae : Homoptera) : A new species record for Florida. Fla. Entomol. 57: 285.

507. Nielsson, R. J.; Bhatkar, A. P.; and Denmark, H. A. 1971. A preliminary list of ants associated with aphids in Florida. Fla. Entomol. 54: 245–248.

O

508. Oberheu, J. C. 1972. The occurrence of mirex in starlings collected in seven southeastern States —1970. Pestic. Monit. J. 6: 41–42.

509. Ohlendorf, H. M.; Klaas, E. E.; and Kaiser, T. E. 1974. Environmental pollution in relation to estuarine birds. Symp. Survival Toxic Environ., pp. 53–81. Academic Press, New York.

510. Olive, A. T. 1960. Infestation of the imported fire ant, *Solenopsis saevissima* v. *richteri*, at Fort Benning, Georgia. J. Econ. Entomol. 53: 646–648.

511. O'Neal, J. 1974. Predatory behavior exhibited by three species of ants on the imported fire ants, *Solenopsis invicta* Buren and *S. richteri* Forel. Ann. Entomol. Soc. Am. 67: 140.

512. ———, and Markin, G. P. 1973. Brood nutrition and parental relationships of the imported fire ant *Solenopsis invicta*. J. Ga. Entomol. Soc. 8: 294–303.

513. ———, and Markin, G. P. 1975. Brood development of the various castes of the imported fire ant, *Solenopsis invicta* (Hymenoptera : Formicidae). J. Kans. Entomol. Soc. 48: 152–159.

514. ———, and Markin, G. P. 1975. The larval instars of the imported fire ant, *Solenopsis invicta* (Hymenoptera : Formicidae). J. Kans. Entomol. Soc. 48: 141–151.

515. ———; Markin, G. P.; and Collins, H. L. 1974. An automated system to facilitate detection of ingested dyes used in imported fire ant labelling studies. J. Kans. Entomol. Soc. 47: 130–135.

P, Q

516. Padget, L. J. 1958. The fire ant eradication in the southern States. Fla. Entomol. 41: 190.

517. ———. 1959. The imported fire ant program in the southeastern United States. Proc. Assoc. South. Agric. Workers 56: 133.

518. Paget-Clarke, C. D. 1971. Electronic guidance system used in fire ant eradication programmes. Agric. Aviation 13: 89–90.

519. Parr, J. F.; Willis, G. H.; McDowell, L. L.; Murphree, C. E.; and Smith, S. 1974. An automatic pumping sampler for evaluating the transport of pesticides in suspended sediment. J. Environ. Qual. 3: 292–294.

520. Parrish, H. M. 1963. Analysis of 460 fatalities from venomous animals in the United States. Am. J. Med. Sci. 245: 129–141.

521. Pass, B. C. 1960. Bionomics of the imported fire ant, *Solenopsis saevissima richteri* Forel. 54 pp. M.S. thesis, Auburn University, Auburn.

522. Pest Control. 1976. Allied, tired of hassle, halts mirex production. 44(3) : 27.

523. ———. 1976. Fire ant program supported. 44(5) : 8.

524. Pimentel, D. 1971. Ecological effects of pesticides on non-target species. 220 pp. Office of Science & Technology, Executive Office of the President.

525. Pittman, K. A.; Kennedy, M. W.; and Treble, D. H. 1975. Mirex kinetics in the Rhesus monkey. Toxicol. Appl. Pharmacol. 33: 196–197.

526. ———; Wiener, M.; and Treble, D. H. 1976. Mirex kinetics in the Rhesus monkey. II. Pharmacokinetic model. Drug Metab. Dispos. 4: 288–295.

527. Plapp, F. W., Jr. 1973. Mirex: Toxicity, tolerance, and metabolism in the house fly (*Musca domestica*). Environ. Entomol. 2: 1058–1061.

528. Porter, M. L., and Burke, J. A. 1973. An isolation and clean-up procedure for low levels of organochlorine pesticide residues in fats and oils. J. Assoc. Off. Anal. Chem. 56: 733–738.

529. Prather, E. E. 1960. A note on the results of feed-

ing fire ants to bluegills and redear sunfish. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 14: 124.

530. Prins, H. J. 1946. Synthesis of polychloro compounds with aluminum chloride. Recl. Trav. Chim. Pays-Bas 65: 455–467.

531. Prithcard, J. B.; Guarino, A. M.; and Kinter, W. B. 1973. Distribution, metabolism, and excretion of DDT and mirex by a marine teleost, the winter flounder. Environ. Health Perspect. 4: 45–54.

532. Progressive Farmer. 1976. What's the future for fire ant control? 91(7): 44H.

533. Putnam, E. M.; Brewer, R. N.; and Cottier, G. J. 1974. Low level pesticide contamination of soil and feed and its effect on broiler tissue residue. Poult. Sci. 53: 1695–1698.

R

534. Rajanna, B., and De la Cruz, A. A. 1974. Phytotoxicity of mirex on germination, emergence, and early growth of crop seedlings. Assoc. Southeast. Biol. Bull. 21: 76.

535. ———, and De la Cruz, A. A. 1975. Mirex incorporation in the environment: Phytotoxicity on germination, emergence and early growth of crop seedlings. Bull. Environ. Contam. Toxicol. 14: 77–82.

536. Rankin, A. 1957. The great fire ant invasion. Reader's Dig. 71(425): 74–77. [Originally: Fury of the fire ant. Farm Ranch South. Agric. 87(9): 24–54.]

537. Rao, D. S., and Glick, B. 1977. Pesticide effects on the immune response and metabolic activity of chicken lymphocytes. Proc. Soc. Exp. Biol. Med. 154: 27–29.

538. Reagan, T. E.; Coburn, G.; and Hensley, S. D. 1972. Effects of mirex on the arthropod fauna of the Louisiana sugarcane field. Environ. Entomol. 1: 588–591.

539. Reiter, L. 1977. Behavioral toxicology effects of early postnatal exposure to neurotoxins on development of loco-motor activity in the rat. J. Occup. Med. 19: 204–14.

540. Rhoades, R. B.; Schafer, W. L.; Schmid, W. H.; Wubbena, P. F.; Dozier, R. M.; Townes, A. W.; Leifer, K. N.; Cohan, R. H.; and Wittig, H. J. 1974. Hypersensitivity to the imported fire ant. J. Allergy Clin. Immunol. 53: 112.

541. ———; Schafer, W. L.; Schmid, W. H.; Wubbena, P. F.; Dozier, R. M.; Townes, A. W.; and Wittig, H. J. 1975. Hypersensitivity to the imported fire ant. J. Allergy Clin. Immunol. 56: 84–93.

542. Rhoades, W. C. 1962. A synecological study of the effects of the imported fire ant eradication program. Fla. Entomol. 45: 161–173.

543. ———. 1963. A synecological study of the effects of the imported fire ant eradication program. II. Light trap, soil sample, litter sample and sweep net methods of collecting. Fla. Entomol. 46: 301–310.

544. ———, and Davis, D. R. 1967. Effects of meterological factors on the biology and control of the imported fire ant. J. Econ. Entomol. 60: 554–558.

545. ———, and Murray, R. W. 1967. A synecological study imported fire .ant eradication program. Fla. Agric. Exp. Stn. Bull. 720, 42 pp.

546. Ricks, B. L. 1970. Feeding and nutritional relationships in the imported fire ant, *Solenopsis saevissima richteri* Forel. 66 pp. Ph. D. dissertation, Mississippi State University, Mississippi State.

547. ———, and Vinson, S. B. 1970. Feeding acceptability of certain insects and various water-soluble compounds to two varieties of the imported fire ant. J. Econ. Entomol. 63: 145–148.

548. ———, and Vinson, S. B. 1972. Changes in nutrient content during one year in workers of the imported fire ant. Ann. Entomol. Soc. Am. 65: 135–138.

549. ———, and Vinson, S. B. 1972. Digestive enzymes of the imported fire ant, *Solenopsis richteri* (Hymenoptera: Formicidae). Entomol. Exp. Appl. 15: 319–334.

550. Robeau, R. M., and Vinson, S. B. 1976. Effects of juvenile hormone analogues on caste differentiation in the imported fire ant, *Solenopsis invicta*. J. Ga. Entomol. Soc. 11: 198–203.

551. Roe, R. A., II. 1973. A biological study of *Solenopsis invicta* Buren, the red imported fire ant, in Arkansas, with notes on related species. 135 pp. M.S. thesis, University of Arkansas, Fayetteville.

552. Rogillio, G. J. 1974. Effects of mirex on selected organs of the channel catfish (*Ictalurus punctatus*): A light and electron microscope study. 73 pp. Ph. D. dissertation, Mississippi State University, Mississippi State.

553. Ruckelshaus, W. D. 1972. Products containing mirex; determination and order. Fed. Regist. 37(130): 13299–13300.

554. Ruffin, W. A. 1957. The imported fire ant. South. Seedsman 20(6): 44–45.

S

555. San Martin, P. R. 1966. Nota sobre *Anommatocoris coleopteratus* Kormilev, 1955 (Vianaidina, Tingidae, Hemiptera). Rev. Bras. Biol. 26: 327–328.

556. ———. 1966. Notas sobre *Neoblissus parasitaster* Bergrowth, 1903 (Blissinae, Lygaeidae, Hemiptera). Rev. Bras. Biol. 26: 247–251.

557. ———. 1968. Notas sobre *Fustiger elegans* Raffray (Coleoptera, Pselaphidae) en el Uruguay y la Argentina. Physis 28: 59–64.

558. ———. 1968. Nuevo hallazgo de *Metopioxys gallardoi* Bruch, 1917 (Coleoptera, Pselaphidae, Metopiinae). Rev. Bras. Biol. 28: 27–28.

559. ———. 1971. The venomous ants of the genus *Solenopsis*. *In* W. Buckerl et al. (eds.), Venomous Animals and Their Venoms. Vol. III. Venomous Invertebrates, pp. 95–101. Academic Press, New York.

560. Sannasi, A., and Blum, M. S. 1969. Pathological

effects of fire ant venom on the integument and blood of house fly larvae. J. Ga. Entomol. Soc. 4: 103–110.

561. Scheibla, S. 1976. Fighting the fire ant, regulations make it almost impossible to do. Barron's, May 10, pp. 11, 21–22.

562. Schoor, W. P. 1974. Accumulation of mirex-^{14}C in the adult blue crab (*Callinectes sapidus*). Bull. Environ. Contam. Toxicol. 12: 136–137.

563. ———, and Newman, S. M. 1976. The effect of mirex on the burrowing activity of the lugworm (*Arenicola cristata*). Trans. Am. Fish. Soc. 105: 700–703.

564. Scotti, T. M.; Chernoff, N.; and Linder, R. E. 1976. Histopathologic lenticular changes in mirex exposed rats. Toxicol. Appl. Pharmacol. 37: 188.

565. Senn, L. H.; Blocker, H. D.; and Cochran, J. H. 1958. Imported fire ant invades South Carolina. S.C. Agric. Res. 5(2): 6.

566. Shannon, V. C. 1976. The effects of mirex on the reproductive performance and behavioral development of the prairie vole, *Microtus ochrogaster*. 320 pp. Ph. D. dissertation, Iowa State University, Ames.

567. Shapley, D. 1971. Fire ant control under fire. Science 171: 1131.

568. ———. 1971. Mirex and the fire ant: Decline in fortunes of "perfect" pesticide. Science 172: 358–360.

569. Shorey, H. H. 1973. Behavioral responses to insect pheromones. Annu. Rev. Entomol. 18: 349–380.

570. Sikka, H. C.; Butler, G. C.; and Rice, C. P. 1976. Effects, uptake, and metabolism of methoxychlor, mirex, and 2,4–D in seaweeds. U.S. Environ. Prot. Agency, Off. Res. Dev. Rep. EPA–600/3–76–048, 40 pp. [Same as U.S. Natl. Tech. Inf. Serv. PB Rep. PB–255432, 49 pp.]

571. Sikorowski, P. P.; Norment, B. R.; and Broome, J. R. 1973. Fungi pathogenic to imported fire ants. Miss. Agric. For. Exp. Stn. Inf. Sheet 1212.

572. Silviera-Guido, A.; Carbonell, J.; and Crisci, C. 1973. Animals associated with the *Solenopsis* (fire ants) complex, with special reference to *Labauchena daguerri*. Proc. Tall Timbers Conf. Ecol. Anim. Control Habitat Manage. 4: 41–52.

573. ———; Carbonell-Bruhn, J.; Crisci-Pisano, C.; and Briozzo-Beltrame. J. 1967, 1968, 1968 (1969). Investigations on natural enemies of ants. First, second, and final reports. Entomol. Sect., Centro de investigación en Fruiticultura, Horticultura y Vitivinicultura, Ministerio de Granaderia y Agricultura. Montevideo, Uruguay. Pages unknown, 22 pp., 76 pp.

574. ———; Carbonell-Bruhn, J.; Crisci, C.; and San Martin, P. 1967. *Labauchena daguerri* Santschi, como parásito social de la hormiga *Solenopsis saevissima richteri* Forel. Reunión Latinoamericana de Filotechnia Resumenes de los Trabajos Científicos VII, Maracay, Venezuela, p. 210.

575. ———; Carbonell-Bruhn, J.; Crisci, C.; and San Martin, P. 1968. *Labauchena daguerrei* Santschi como parásito social de la hormiga *Solenopsis saevissima richteri* Forel. Agron. Trop. (Maracay, Venez.) 18: 207–209.

576. ———; San Martin, P.; Crisci-Pisano, C.; and Bruhn-Carbonell, J. 1962, 1963, 1964, 1965. Investigations on the biology and biological control of the fire ant, *Solenopsis saevissima richteri* Forel, in Uruguay. First, second, third, and final reports. Departmento de Sanidad Vegetal, Facultad de Agronomia, University of the Republic. Montevideo, Uruguay. 18 pp., 78 pp., 67 pp., 70 pp.

577. Sinski, J. T.; Adrouny, G. A.; Derbes, V. J.; and Jung, R. C. 1959. Further characterization of hemolytic component of fire ant venom, mycological aspects. Proc. Soc. Exp. Biol. Med. 102: 659–660.

578. Smith, D. R. 1972. Two species of imported fire ants in the United States. Coop. Econ. Insect Rep. 22: 103.

579. Smith, H. A. 1976. Nobel nemesis of fire ants: A new anteater. Smithsonian 7(1): 140.

580. Smith, J. C. 1961. The relative effect of Kepone baits on the imported fire ant, bobwhite quail, and dairy cow. 59 pp. M.S. thesis, Auburn University, Auburn.

581. Smith, J. D., and Smith, E. B. 1971. Multiple fire ant stings: A complication of alcoholism. Arch. Dermatol. 103: 438–441.

582. Smith, M. R. 1943. A generic and subgeneric synopsis of the male ants of the United States. Am. Midl. Nat. 30: 273–321.

583. ———. 1947. A generic and subgeneric synopsis of the United States ants, based on the workers (Hymenoptera: Formicidae). Am. Midl. Nat. 37: 521–633.

584. ———. 1949. [No title—a note in minutes of meeting.] Proc. Entomol. Soc. Wash. 51: 178–179.

585. ———. 1949. Report on imported fire ant investigations. U.S. Dep. Agric., Mimeo. Rep., 42 pp.

586. ———. 1951. Family Formicidae. *In* C. F. W. Muesebeck, K. V. Krombein, and H. K. Townes (eds.), Hymenoptera of America North of Mexico. Synoptic Catalog. (Agric. Monogr. 2), pp. 778–875. GPO, Washington.

587. ———. 1958. Family Formicidae. *In* K. V. Krombein (ed.), Hymenoptera of America North of Mexico. (Agric. Monogr. 2, 1st suppl.), pp. 108–162. GPO, Washington.

588. ———. 1965. House-infesting ants of the eastern United States. U.S. Dep. Agric. Tech. Bull. 1326, 105 pp.

589. ———. 1967. Family Formicidae. *In* K. V. Krombein and B. D. Burks (eds.), Hymenoptera of America North of Mexico. (Agric. Monogr. 2, 2d suppl.), pp. 343–374. GPO, Washington.

590. Smith, R. D., and Glasgow, L. L. 1965. Effects of heptachlor against Argentine fire ant (*Solenopsis saevissima richteri*) on wildlife in Louisiana. Proc. Annu. Conf. Southeast. Assoc. Game Fish Comm. 17: 140–153.

591. Snelling, R. R. 1963. The United States species of fire ants of the genus *Solenopsis*, subgenus

Solenopsis Westwood, with synonymy of *Solenopsis aurea* (Wheeler) (Hymenoptera-Formicidae). Occas. Pap. Bur. Entomol. Calif. Dep. Agric. 3, 15 pp.

592. Sonnet, P. E. 1967. Fire ant venom: Synthesis of a reported component of solenamine. Science 156: 1759–1760.

593. Southern Plant Board. 1957. Summary of conclusions reached in considering the fire ant program. 2 pp. The Board, Memphis.

594. Spears, J. F. 1969. Domestic quarantine notices. Imported fire ant, exemptions. Fed. Regist. 34(8): 7014–7015.

595. Spence, J. E. 1962–63. A comparison of the allergenic and immunological effects of the hemolytic component of fire ant venom. Tulane Univ. La. Med. Sch. Prize Essay 7: 212–230.

596. Spence, J. H., and Markin, G. P. 1974. Mirex residue in the physical environment following a single bait application—1971–72. Pestic. Monit. J. 8: 135–139.

597. Stein, V. B.; Pittman, K. A.; and Kennedy, M. W. 1976. Characterization of a mirex metabolite from monkeys. Bull. Environ. Contam. Toxicol. 15: 140–146.

598. Steinhaus, E. A., and Marsh, G. A. 1967. Previously unreported accessions for diagnosis and new records. J. Invertebr. Pathol. 9: 436–438.

599. Stickel, W. H.; Galyen, J. A.; Dyrland, R. A.; and Hughes, D. L. 1973. Toxicity and persistence of mirex in birds. Pesticides in the Environment: Continuing Controversy, Pap. Inter-Am. Conf. Toxicol. Occup. Med. 8: 437–467.

600. Stratton, L. O., and Coleman, W. P. 1973. Maze learning and orientation in the fire ant (*Solenopsis saevissima*). J. Comp. Physiol. Psych. 83: 7–12.

601. Stringer, C. E., Jr.; Banks, W. A.; Glancey, B. M.; and Lofgren, C. S. 1976. Red imported fire ants: Capability of queens from established colonies and of newly-mated queens to establish colonies in the laboratory. Ann. Ent. Soc. Am. 69: 1004–1006.

602. ———; Glancey, B. M.; Bishop, P. M.; Craig, C. H.; and Martin, B. B. 1972. Air separation of different castes of the imported fire ant. J. Econ. Entomol. 65: 872–873.

603. ———; Glancey, B. M.; Bishop, P. M.; Craig, C. H.; and Martin, B. B. 1973. A device for sampling the distribution patterns of granules dispersed from aircraft. Fla. Entomol. 56: 15–17.

604. ———; Glancey, B. M.; and Martin, B. B. 1973. A simple method for separating alate imported fire ants from workers and soil. J. Econ. Entomol. 66: 295.

605. ———; Lofgren, C. S.; and Bartlett, F. J. 1964. Imported fire ant toxic bait studies: Evaluation of toxicants. J. Econ. Entomol. 57: 941–945.

606. Stroud, R. H., ed. 1958. Super insecticides—space-age pollutants. Sport Fish. Inst. Bull. 74: 1–2.

607. Sukhoruchenko, G. I., and Tolstova, Y. S. 1973. Sensitivity of predatory insects to insecticides and acaricides. Khim. Sel. Khoz. 11: 515–518. [In Russian. English abstract in Chem. Abstr. 79(21): 122544.]

608. Summerlin, J. W.; Banks, W. A.; and Schroeder, K. H. 1975. Food exchange between mounds of the red imported fire ant. Ann. Entomol. Soc. Am. 68: 863–866.

609. ———; Hung, A. C. F.; and Vinson, S. B. 1977. Residues in nontarget ants, species simplification, and recovery of populations following aerial applications of mirex. Environ. Entomol. 6(2): 193–197.

610. ———; Olson, J. K.; Blume, R. R.; Aga, A.; and Bay, D. E. 1977. Red imported fire ant: Effects on *Onthophagus gazella* and the horn fly. Environ. Entomol. 6: 440–442.

611. ———; Olson, J. K.; and Fick, J. O. 1976. Red imported fire ant: Levels of infestation in different land management areas of the Texas coastal prairies and an appraisal of the control program in Fort Bend County, Texas. J. Econ. Entomol. 69: 73–78.

612. Sundarm, S. 1964. Vibrational spectra of $C_{10}Cl_{12}$ and $C_{10}Cl_{10}O$. Dev. Appl. Spectros. 4: 179–185.

T

613. Tagatz, M. E. 1976. Effect of mirex on predator-prey interaction in an experimental estuarine ecosystem. Trans. Am. Fish. Soc. 105: 546–549.

614. ———; Borthwick, P. W.; and Forester, J. 1975. Seasonal effects of leached mirex on selected estuarine animals. Arch. Environ. Contam. Toxicol. 3: 371–383.

615. ———; Borthwick, P. W.; Ivey, J. M.; and Knight, J. 1976. Effects of mirex on experimental communities of estuarine animals. Arch. Environ. Contam. Toxicol. 4: 435–442.

616. Tennessee Farmer. 1969. Capsule controls fire ant. 16(2): 4F.

617. Ten Noever, D. E.; DeBraun, M. C.; VanIngln, C.; and Koeman, J. H. 1973. Mirex in seals. Sci. Total Environ. 2: 196–198.

618. Texas Agricultural and Mechanical College Extension Service. 1958. How to control the imported fire ant. Leafl. 384, 6 pp.

619. Thompson, J. L. 1967. Baits and natural feeding stimulants of the imported fire ant. 79 pp. M.S. thesis, Mississippi State University, Mississippi State.

620. Thompson, T. E., and Blum, M. S. 1967. Structure and behavior of spermatozoa of the fire ant *Solenopsis saevissima* (Hymenoptera: Formicidae). Ann. Entomol. Soc. Am. 60: 632–642.

621. Thorne, T. D. 1958. Imported fire ant; this small red ant is becoming a major crop problem in the South. Crops Soils 11(2): 11–12.

622. Tice, J. E. 1967. The anatomy and histology of some of the systems of the male of the red imported fire ant, *Solenopsis saevissima richteri* Forel (Hymenoptera: Formicidae). 122 pp. Ph. D. dissertation, Fordham University, New York.

623. Time. 1970. Fighting the fire ant. 96(40): 32–33.

624. Toom, P. M.; Cupp, E. W.; and Johnson, C. P. 1976. Amino acid changes in newly inseminated queens of *Solenopsis invicta*. Insect Biochem. 6: 327–331.

625. ———; Cupp, E.; Johnson, C. P.; and Griffin, I. 1976. Utilization of body reserves for minim brood development by queens of the imported fire ant, *Solenopsis invicta*. J. Insect Physiol. 22: 217–220.

626. ———; Johnson, C. P.; and Cupp, E. W. 1976. Utilization of body reserves during preoviposition activity by *Solenopsis invicta*. Ann. Entomol. Soc. Am. 69: 145–148.

627. Triplett, R. F. 1973. Sensitivity to the imported fire ant; successful treatment with immunotherapy. South. Med. J. 66: 477–480.

628. Trivers, R. L., and Hare, H. 1976. Haplodiploidy and the evolution of the social insects. Science 191: 249–263.

629. Troisi, S. J., and Riddiford, L. M. 1974. Juvenile hormone effects of metamorphosis and reproduction of the fire ant, *Solenopsis invicta*. Environ. Entomol. 3: 112–116.

630. Tucker, R. K., and Crabtree, D. G. 1970. Handbook of toxicity of pesticides to wildlife. U.S. Fish Wildl. Serv. Res. Publ. 84, 131 pp.

631. Turnipseed, G. D. 1974. The effects of selected chlorinated hydrocarbon insecticides on *Chlamydomonas-Reinhardtii*. J. Phycol. 10 (suppl.): 15.

U

632. Uk, S.; Himel, C. M.; and Dirks, T. F. 1972. Mass spectral pattern of mirex (dodecachlorooctahydro-1,3,4- metheno -2*H*- cyclobuta[cd]pentalene) and of Kepone (decachlorooctahydro-1,3,4-metheno -2*H*- cyclobuta[*cd*]-pentalen -2- one) and its application in residue analysis. Bull. Environ. Contam. Toxicol. 7: 207–215.

633. ———; Himel, C. M.; and Dirks, T. 1972. Mass spectrometric identification of mirex residues in crude extracts and in the presence of polychlorinated biphenyls. Bull. Environ. Contam. Toxicol. 8: 97–104.

634. Ulland, B. M.; Page, N. P.; Squire, R. A.; Weisburger, E. K.; and Cypher, R. L. 1977. A carcinogenicity assay of mirex in Charles River CD rats. J. Natl. Cancer Inst. 58(1): 133–140.

635. ———; Weisburger, E. K.; and Weisburger, J. H. 1973. Chronic toxicity and carcinogenicity of industrial chemicals and pesticides. Toxicol. Appl. Pharmacol. 25: 446.

636. Ungefug, G. A., and Scherer, K. V., Jr. 1970. Unsymmetrical perchloropentacyclodecane from octachloropentacyclo$[5.3.0.0^{2,5}.0^{3,9}.0^{4,8}]$decane-6, 10-dione. Tetrahedron Lett. 1970: 2923–2936.

637. U.S. Agricultural Research Service. 1951. The imported fire ant. Rep. EC–17, 6 pp.

638. ———. 1957. Imported fire ant (*Solenopsis saevissima richteri* Forel). Coop. Econ. Insect Rep. 7: 245–246.

639. ———. 1957. Notes and illustrations for field separation of fire ants. Coop. Econ. Insect Rep. 7: 901.

640. ———. 1958. Facts about the imported fire ant eradication program. 10 pp.

641. ———. 1958. The fight against the imported fire ant. PA 368, 4 pp.

642. ———. 1958. The imported fire ant; how to control it. Leafl. 350, 8 pp.

643. ———. 1958. Observations on the biology of the imported fire ant. Rep. ARS 33–49, 21 pp.

644. ———. 1962. The imported fire ant program and progress. Rep. ARS 81–9, 10 pp.

645. ———. 1963. The imported fire ant; program and progress. Rep. ARS 819–1, 10 pp.

646. ———. 1965. Ants versus ants. Agric. Res. 13(11): 8–9.

647. ———. 1966. Domestic quarantine notices, imported fire ant. Fed. Regist. 31(50): 4386–9.

648. ———. 1966. Imported fire ant. Amendment of list of approved laboratories authorized to receive soil samples without certification or permit. Fed. Regist. 31(149): 10424–5.

649. ———. 1966. Domestic quarantine notices. Imported fire ant. Regulated areas. Fed. Regist. 31(167): 11341.

650. ———. 1966. Domestic quarantine notices. Imported fire ant. Fed. Regist. 31(189): 12709.

651. ———. 1967. Notice of filing petition regarding pesticides. Fed. Regist. 32(223): 15848.

652. ———. 1967. Bibliography on imported fire ant (*Solenopsis saevissima richteri* Forel). Coop. Econ. Insect Rep. 17: 422–430.

653. ———. 1968. The imported fire ant. PA 592, 8-p. folder.

654. ———. 1969. Capsule control for fire ant. Agric. Res. 17(8): 5.

655. ———. 1971. Bibliography on imported fire ant (*Solenopsis saevissima richteri* Forel). Coop. Econ. Insect. Rep. 21: 639–652.

656. ———. 1974. A super colony. Agric. Res. 23(1): 12–14.

657. ———. 1974. Mirex and reproduction. Agric. Res. 23(3): 16.

658. U.S. Animal and Plant Health Inspection Service. 1972. Ecological range for the imported fire ant—based on plant hardiness. Coop. Econ. Insect Rep. 22(7): centerfold map.

659. ———. 1976. Imported fire ant quarantines. Coop. Plant Pest Rep. 1(1–4): centerfold map.

660. U.S. Department of Agriculture. 1976. Working with insects—dead and alive. USDA 35(3): 3.

661. ———. 1976. Kepone from mirex. USDA 35(5): 3.

662. ———. Office of Information. 1959. Proving ground for weapons against fire ant. Picture story 117, 4 pp.

663. U.S. Environmental Protection Agency. 1972. Products containing the insecticide mirex: Determination and order of the administrator. Fed. Regist. 37: 10987–10988.

664. U.S. News and World Report. 1977. Fire ants: The experts throw up their hands. Jan. 17, p. 79.

V

665. Van den Bosch, R. 1976. Kepone's kin. Time 107(8): 4a.

666. Van Dresser, C. 1958. Man vs. ant. Am. Forests 64(11): 14–15, 44–47.

667. Van Middelem, C. H., chairman. 1973. Report of mirex advisory committee, NAS, to administrator, Environmental Protection Agency. 70 pp.

668. Van Valin, C. C.; Andrews, E. K.; and Eller, L. L. 1968. Some effects of mirex on two warm-water fishes. Trans. Am. Fish. Cult. 97: 185–196.

669. Vaughn, W. L. 1971. Mirex: Next on "EEK-ology ban wagon"? Farm Chem. 134: 46–48.

670. Vickers, L. 1973. Fire ant control could trigger fish problems. Nat. Fisherman, Apr., pp. 10–11c.

671. Vinson, S. B. 1968. The distribution of an oil, carbohydrate, and protein food source to members of the imported fire ant colony. J. Econ. Entomol. 61: 712–714.

672. ———. 1970. Gustatory response by the imported fire ant to various electrolytes. Ann. Entomol. Soc. Am. 63: 932–935.

673. ———. 1972. Imported fire ant feeding on *Paspalum* seed. Ann. Entomol. Soc. Am. 65: 988.

674. ———, and Robeau, R. 1974. Insect growth regulator: Effects on colonies of the imported fire ant. J. Econ. Entomol. 67: 584–587.

675. ———; Robeau, R.; and Dzuik, L. 1974. Bioassay and activity of several insect growth regulators analogues on the imported fire ant. J. Econ. Entomol. 67: 325–328.

676. ———; Thompson, J. L.; and Green, H. B. 1967. Phagostimulants for the imported fire ant, *Solenopsis saevissima* var. *richteri*. J. Insect Physiol. 13: 1729–1736.

W

677. Waldo, E. 1957. Fire ant threat. La. Conserv. 9(4): 22–24.

678. Walker, J. R. 1959. The alimentary canal of the imported fire ant queen (*Solenopsis saevissima richteri* Forel). 37 pp. M.S. thesis, Louisiana State University, Baton Rouge.

679. ———, and Clower, D. F. 1961. Morphology and histology of the alimentary canal of the imported fire ant queen (*Solenopsis saevissima richteri*). Ann. Entomol. Soc. Am. 54: 92–99.

680. Walker, W. W. 1976. Pesticides and their residues in the Mississippi coastal zone. J. Miss. Acad. Sci. 21: 148–151.

681. Wallace, J. B. 1970. The defensive function of a case on a chrysomelid larva. J. Ga. Entomol. Soc. 5: 19–24.

682. Walsh, C. T.; Law, J. H.; and Wilson, E. O. 1965. Purification of the fire ant (*Solenopsis saevissima*) trail substance. Nature (London) 207: 320–321.

683. Walsh, G. E.; Hollister, T. A.; and Forester, J. 1974. Translocation of 4 organochlorine compounds by red mangrove, *Rhizopora mangle* seedlings. Bull. Environ. Contam. Toxicol. 12: 129–135.

684. Walsh, J. P. 1972. Brood recognition by contact pheromone in the imported fire ant, *Solenopsis invicta*. 80 pp. M.S. thesis, Florida State University, Tallahassee.

685. ———, and Tschinkel, W. R. 1974. Brood recognition by contact pheromone in the imported fire ant, *Solenopsis invicta*. Anim. Behav. 22: 695–704.

686. Ware, G. W. 1965. Hormonal imbalance in mice fed continuous low levels of certain chlorinated organic insecticides, Kepone, mirex, and telodrin. Proc. Int. Congr. Entomol. 12: 482–483.

687. ———, and Good, E. E. 1967. Effects of insecticides on the reproduction in the laboratory mouse. II. Mirex, telodrin, and DDT. Toxicol. Appl. Pharmacol. 10: 54–61.

688. Warren, L. O., and Rouse, E. P. 1969. The ants of Arkansas. Arkansas Agric. Exp. Stn. Bull. 742, 67 pp.

689. Warren, R. J., and Kirkpatrick, R. L. 1976. Influence of mirex ingestion on cottontail eye lens weight. J. Wildl. Manage. 40: 797–799.

690. ———; Kirkpatrick, R. L.; and Vogeleang, R. W. 1975. Effect of mirex and a polychlorinated biphenyl on pentobarbital induced sleeping times and organ weights of male cottontail rabbits. Va. J. Sci. 26: 60.

691. Wheeler, G. C., and Wheeler, J. 1955. The ant larvae of the myrmicine tribe Solenopsidini. Am. Midl. Nat. 54: 119–141.

692. ———, and Wheeler, J. 1960. The ant larvae of the subfamily Myrmicinae. Ann. Entomol. Soc. Am. 53: 98–110.

693. ———, and Wheeler, J. 1960. Supplementary studies on the larvae of the Myrmicine (Hymenoptera: Formicidae). Proc. Entomol. Soc. Wash. 62: 1–32.

694. Wheeler, J. 1958. The fire ant. Fla. Wildl. 11(10): 28–29, 40–41.

695. Wheeler, R. J.; Friday, D. F.; Burchfield, H. P.; and Storrs, E. E. 1975. Use of the nine-banded armadillo for sampling soil insects for pesticide residue analysis. *In* F. Coulston and F. Korte (eds.), Environmental Quality and Safety Supplement. Vol. 3. Pesticides, pp. 129–134. 3d Int. Congr. Int. Union Pure Appl. Chem. Helsinki, Finland, July 3–9, 1974.

696. Whitcomb, W. H. 1974. Natural populations of entomophagous arthropods and their effects on the agroecosystem. *In* F. G. Maxwell and F. A. Harris (eds.), Proc. Summer Inst. Biol. Control Plants Insects Dis., pp. 150–169.

697. ———; Bhatkar, A.; and Nickerson, J. C. 1973. Predators of *Solenopsis invicta* queens prior to colony establishment. Environ. Entomol. 2: 1101–1103.

698. ———; Denmark, H. A.; Bhatkar, A. P.; and Greene, G. L. 1972. Preliminary studies on the ants of Florida soybean fields. Fla. Entomol. 55: 129–142.

699. Wiener, M.; Pittman, K. A.; and Stein, V. 1976. Mirex kinetics in the Rhesus monkey. I. Disposition and excretion. Drug Metab. Dispos. 4: 281–287.

700. Williams, J. L. 1976. Status of the greater wax moth, *Galleria mellonella*, in the USA beekeeping industry. Am. Bee J. 116: 524–526.

701. Williams, R. N.; Panaia, J. R.; Gallo, D.; and Whitcomb, W. H. 1973. Fire ants attacked by phorid flies. Fla. Entomol. 56: 259–262.

702. ———, and Whitcomb, W. H. 1973. Novos inimigos dos formigas lava-pé (Complexo *Solenopsis saevissima*) (Hymenoptera: Formicidae). An. Soc. Entomol. Bras. 2: 74–85.

703. ———, and Whitcomb, W. H. 1974. Parasites of fire ants in South America. Proc. Tall Timbers Conf. Ecol. Anim. Control Habitat Manage. 5: 49–59.

704. Wilson, E. O., Jr. 1949. From any angle, it's a nuisance, *richteri*, the imported fire ant. Ala. Conserv. 20(12): 8–9.

705. ———. 1951. Variation and adaptation in the imported fire ant. Evolution 5: 68–79.

706. ———. 1952. A report on the imported fire ant *Solenopsis saevissima* var. *richteri* Forel in the Gulf States. J. Ala. Acad. Sci. 21: 52.

707. ———. 1952. O complexo *Solenopsis saevissima* na America do Sul (Hymenoptera: Formicidae). Mem. Inst. Oswaldo Cruz. 50: 49–68. [English translation included, pp. 60–68.].

708. ———. 1953. Origin of the variation in the imported fire ant. Evolution 7: 262–263.

709. ———. 1958. The fire ant. Sci. Am. 198(3): 36–41.

710. ———. 1959. Invader of the South. Nat. Hist. 68(5): 276–281.

711. ———. 1959. Source and possible nature of the odor trail of fire ants. Science 129: 643–644.

712. ———. 1962. Chemical communication among workers of the fire ant *Solenopsis saevissima* (Fr. Smith). 1. The organization of mass-foraging. 2. An information analysis of the odour trail. 3. The experimental induction of social responses. Anim. Behav. 10: 134–164.

713. ———. 1963. Pheromones. Sci. Am. 208(5): 100–114. [Also Sci. Am. reprint 157: 1–12.]

714. ———. 1963. The social biology of ants. Annu. Rev. Entomol. 8: 345–368.

715. ———. 1965. Chemical communication in the social insects. Science 149: 1064–1071.

716. ———. 1966. Behavior of social insects. Symp. Roy. Entomol. Soc. London 3: 81–96.

717. ———. 1971. The insect societies. 548 pp. Belknap Press, Cambridge, Mass.

718. ———. 1975. Enemy specification in the alarm recruitment system of an ant. Science 190: 798–800.

719. ———. 1975. Sociobiology. 697 pp. Belknap Press, Cambridge, Mass.

720. ———, and Bossert, W. H. 1963. Chemical communication among animals. Recent Progr. Hormone Res. 19: 673–716.

721. ———, and Brown, W. L., Jr. 1958. Recent changes in the introduced population of the fire ant (*Solenopsis saevissima*) (Fr. Smith). Evolution 12: 211–218.

722. ———; Durlach, N. I.; and Roth, L. M. 1958. Chemical releasers of necrophoric behavior in ants. Psyche 65: 108–114.

723. ———, and Eads, J. H. 1949. A report on the imported fire ant *Solenopsis saevissima* var. *richteri* Forel in Alabama. Ala. Dep. Conserv. Spec. Rep., 53 pp., 13 plates. [Mimeographed.]

724. ———, and Eisner, T. 1957. Quantitative studies of liquid food transmission in ants. Insectes Sociaux 4: 157–166.

725. Wilson, N. L. 1969. Foraging habits and effects of the imported fire ant, *Solenopsis saevissima richteri* Forel, on some arthropod populations in southeastern Louisiana. 91 pp. Ph. D. dissertation, Louisiana State University, Baton Rouge.

726. ———; Dillier, J. H.; and Markin, G. P. 1971. Foraging territories of imported fire ants. Ann. Entomol. Soc. Am. 64: 660–665.

727. ———, and Oliver, A. D. 1969. Food habits of the imported fire ant in pasture and pine forest areas in southern Louisiana. J. Econ. Entomol. 62: 1268–1271.

728. ———, and Oliver, A. D. 1970. Relationship of the imported fire ant to Nantucket pine tip moth infestations. J. Econ. Entomol. 63: 1250–1252.

729. Wilson, W. L., and Eads, R. B. 1958. Occupational exposure to the imported fire ant. Ind. Med. Surg. 27: 436–438.

730. Wojcik, D. P. 1975. Biology of *Myrmecaphodius excavaticollis* (Blanchard) and *Euparia castanea* Serville (Coleoptera: Scarabaeidae) and their relationships to *Solenopsis* spp. (Hymenoptera: Formicidae). 74 pp. Ph. D. dissertation, University of Florida, Gainesville.

731. ———; Banks, W. A.; and Buren, W. F. 1975. First report of *Pheidole moerens* in Florida (Hymenoptera: Formicidae). Coop. Econ. Insect Rep. 25: 906.

732. ———; Banks, W. A.; Hicks, D. M.; and Plumley, J. K. 1972. A simple, inexpensive pitfall trap for collecting arthropods. Fla. Entomol. 55: 115–116.

733. ———; Banks, W. A.; Plumley, J. K.; and Lofgren, C. S. 1972. Results of laboratory tests with additional candidate bait toxicants against the imported fire ant. U.S. Dep. Agric., Agric. Res. Serv., Insects Affecting Man Research Laboratory, Gainesville, Fla. Spec. Rep. 70–03–W, 43 pp.

734. ———; Banks, W. A.; Plumley, J. K.; and Lofgren, C. S. 1973. Red imported fire ant: Laboratory tests with additional candidate bait toxicants. J. Econ. Entomol. 66: 550.

735. ———; Banks, W. A.; Wheeler, W. B.; Jouvenaz, D. P.; Van Middelem, C. H.; and Lofgren, C. S. 1975. Mirex residues in nontarget organisms after application of experimental baits for fire ant control: Southwest Georgia—1971–72. Pestic. Monit. J. 9: 124–133.

736. ———; Buren, W. F.; Grissell, E. E.; and Carlysle, T. 1966. The fire ants (*Solenopsis*) of Florida (Hymenoptera : Formicidae). Fla. Dep. Agric. Consum. Serv., Div. Plant Ind., Entomol. Circ. 173, 4 pp.

737. Wolfe, J. L., and Norment, B. R. 1973. Accumulation of mirex residues in selected organisms after an aerial treatment, Mississippi—1971–72. Pestic. Monit. J. 7: 112–116.

738. Wolff, A. 1971. Big schemes for little ants. Audubon 73(1): 120–12.

739. ———. 1976. Making mountains out of fire ant mounds. Audubon 78(4): 138–140.

740. Woodham, D. W.; Bond, C. A.; Ahrens, E. H.; and Medley, J. G. 1975. The cumulation and disappearance of mirex residues. III. In eggs and tissues of hens fed two concentrations of the insecticide in their diet. Bull. Environ. Contam. Toxicol. 14: 98–104.

741. Woodruff, R. E. 1973. The scarab beetles of Florida (Coleoptera : Scarabaeidae). Part I. The Laparosticti (Subfamilies : Scarabaeinae, Aphodiinae, Hybosorinae, Ochodaeinae, Geotrupinae, Acanthocerinae). Fla. Dep. Agric., Div. Plant Ind. Arthropods of Florida and Neighboring Land Areas. Vol. 8, 220 pp.

X, Y, Z

742. Yang, R. S. H.; Coulston, F.; and Goldberg, L. 1975. Binding of hexachlorobenzene to erythrocytes, species variation. Life Sci. 17: 545–549.

743. Yap, H. H.; Desaiah, D.; Cutcomp, L. K.; and Koch, R. B. 1975. *In-vitro* inhibition of fish ATPase activity by cyclodiene insecticides and related compounds. Bull. Environ. Contam. Toxicol. 14: 163–167.

744. Yeh, J. Z. 1973. Effects of fire ant venoms in neuromuscular transmission. Fed. Proc. 32: 772.

745. ———; Narahashi, T.; and Almon, R. R. 1975. Characterization of blocking action of piperidine derivatives. J. Pharmacol. Exp. Ther. 194: 373–383.

746. Zijp, D. H., and Gerding, H. 1958. The structure of the compound $C_{10}Cl_{12}$. Recl. Trav. Chim. Pays-Bas 77: 682–691.

INDEX OF AUTHORS

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